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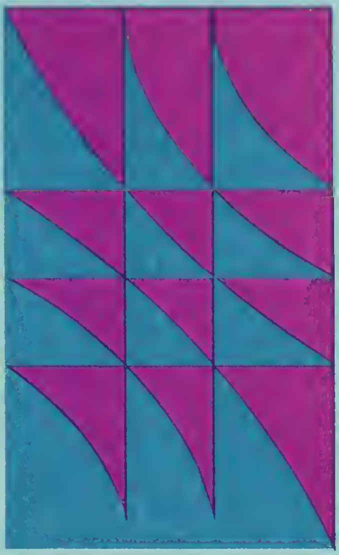
FAMILY, WORK & HEALTH



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FAMILY, WORK & HEALTH *Survey Report*

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November, 1988

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Public health programs that strive to improve family health must recognize the many ways in which family health can be affected by the conditions men and women face at work. From birth through old age, workplace conditions can have a profound effect on the quality of family life. Workplace exposures can affect one's ability to conceive a child or can determine the health of a fetus. Parental leave and child care policies can have a critical impact on the quality of care for newborn infants in the crucial first months of life and beyond. Sick leave policies for working parents can determine the kind of care available to children and elderly relatives in times of need. In many ways, occupational health and family health are integrally connected.

The Family, Work and Health survey was carried out in 1987 in an attempt to define and analyze the ways in which employers have responded to the needs of working parents. Carried out jointly by the Massachusetts Department of Public Health and the University of Massachusetts Occupational Health Program, the survey focused on Massachusetts chemical and electronics companies with 50 or more employees. A total of 198 companies were surveyed including 90% of the chemical industry and 52% of the electronics industry in Massachusetts. The "Family, Work and Health" report summarizes the results of this survey in two distinct areas: Part One addresses reproductive hazards in the workplace; Part Two addresses parenting and family care issues.

Part One: Reproductive Hazards in the Workplace

Nationwide, there have been no studies of corporate policies now in effect regarding reproductive hazards in the workplace. This is the first study of its kind to analyze systematically the prevalence and characteristics of employer practices regarding reproductive hazards. The results of this survey illustrate findings in two important areas -- in knowledge of reproductive hazards and in policies designed to address the risks from those hazards.

First, while use of reproductive hazards was high, overall knowledge of reproductive hazards was relatively low. Fifty three per cent of all companies reported use of at least one of the 4 known or strongly suspected hazards designated in the survey. Yet fewer than half (40%) of respondents from companies using a known hazard acknowledged that substances present in their workplace might be harmful to the reproductive system. Fewer than half of all companies surveyed provided any information on potential reproductive risks to workers.

Second, the results of this survey indicate that companies varied widely in the nature of policies designed to address the risks posed by reproductive hazards in the workplace. Nearly 20% of all companies in the survey restricted the work of women on the grounds of potential risks to reproductive health. Most restrictions applied to pregnant women, though companies also sometimes restricted the work of all women, women of childbearing age or women "who are trying to conceive." Companies restricted women for categories as broad as "any chemical" to substances as specific as lead. Some companies also restricted women from particular work areas or work activities, such as soldering work or work involving heavy lifting.

Companies that restricted women as a class (all women or women of childbearing age) were more likely to employ a greater number of men than women in production, whereas companies that restricted pregnant women or women trying to conceive were more likely to employ an even or greater number of women. Of those companies that required women to leave their jobs once they became pregnant, 92% offered restricted women the option of another job with the company with retention of the same rate of pay and benefits during their pregnancy. This finding stands in marked contrast to prior reports of exclusionary practices where women faced job or income loss as a result of these policies.

Some companies which did not have mandatory restrictions allowed women to voluntarily transfer out of jobs involving reproductive hazards. Thirteen percent of all companies allowed at least some class of women workers to transfer. Most transfer policies applied only to pregnant women. Companies reported that all pregnant women allowed to voluntarily transfer retained the same pay rate and seniority during their transfer to another job.

Companies with an even or greater number of female employees were more likely than male intensive companies to grant transfers to women workers. Companies with a greater number of men in production were more likely to restrict women workers (rather than allow voluntary transfers).

Of the 105 companies with a known reproductive hazard in use, 54% had no reproductive hazard policy (exclusions or transfers).

Because mandatory restriction policies require company knowledge of reproductive status, a number of questions were designed to assess company knowledge of the reproductive status of workers. Of the 98 companies that take a health history, one-third (33 companies) asked women about current pregnancy status when taking a health history at hire. Two companies also reported conducting pregnancy tests on women at hire. Companies which employed more men than women in production were more likely to ask about pregnancy status than female-intensive companies.

The results of this survey clearly illustrate the need for better workplace education and better policy development regarding reproductive hazards in the workplace. The lack of accurate knowledge about reproductive hazards in the workplace as well as the tendency to identify reproduction exclusively with pregnant women has led to policies which are often inappropriate. In some cases, women workers are "overprotected"-- restricted from work which does not pose a significant risk to their reproductive health. In other cases, restrictive policies are "under inclusive" due to assumptions that only pregnant women are at risk. While such policies may protect the health of pregnant women in the short run, the nearly exclusive focus on pregnant women has led to a lack of attention to the reproductive health of non-pregnant women and male workers.

The findings of this portion of the survey point to a number of critical areas of need:

> WORKER AND EMPLOYER EDUCATION about reproductive hazards in the workplace is essential to the prevention of poor birth outcomes and reproductive disorders for men and women.

POLICY GUIDELINES are necessary to provide both workers and employers with a guide to the most equitable and effective ways to protect family health in the workplace. Policy guidelines should address the viability of the full range of work options from safer chemical substitution or engineering controls to the transfer or restriction of workers at risk.

Part Two: Parenting and Family Care Issues

The Family, Work and Health survey assessed company response to the broad range of "family care" issues faced by workers, such as the need for parental leave, child care, provision of health education services and support for elder care.

Ninety-two percent of all companies had a maternity leave policy; eighty percent provided leave with pay. Fifteen percent of these companies gave women less than eight weeks off for the birth of a child. Very few companies allowed men leave time for the birth of a child (16 companies). Seven of these companies provided for a leave of five days or less. At the other end of the spectrum three companies allowed new fathers twelve weeks and one company allowed a paternity leave of up to twenty weeks for the birth of a child.

Companies were no more likely to provide support for child care than to provide for paternity leaves. Only 16 of the 198 companies surveyed provided any child care support. Larger companies were no more likely to offer child care benefits than smaller companies.

Working parents were more likely to receive support for family care issues if they worked for a company which employed a greater number of men than women in production. Male-intensive companies were more likely than female-intensive companies to provide education on prenatal care, to provide assistance on personal and family problems as well as alcoholism or drug abuse, and to have maternity leave, paternity leave and child care benefits. Although male-intensive companies were more likely to be unionized, unionization alone did not account for the difference in the provision of parenting and family care support.

In the area of family care, the results of this survey point to a number of areas of need:

--WORKER AND EMPLOYER EDUCATION about basic legal rights regarding pregnancy, parenting and work is essential. Increased awareness of maternity leave laws as well as laws concerning questions about pregnancy status are necessary for the reduction of discriminatory workplace practices.

--INNOVATIVE CHILD CARE PROGRAMS, both public and private, are essential for the creation of a healthy work environment. Whether from public or private sources, financial assistance for child care is especially important for low-income working mothers.

--PARENTAL LEAVE LEGISLATION that guarantees a leave for both mothers and fathers would help ease the burden faced by new parents. Paid paternity leave is particularly essential for low-income men and women. Further research on the viability of paternity leave policies would provide an important guide to the development of such policies.

RECOMMENDATIONS

A work environment which enhances family health is one that can respond in a positive way to the varying needs of its workers. From protecting workers from reproductive hazards to providing support for workers who must care for children or elderly family members, workplace practices can deeply affect the quality of life for men, women and children throughout the life cycle.

Much public attention has focused on "parenting and family care" problems of working parents, particularly in relation to child care and parenting leave. Planning groups in the Executive Office of Labor and the State Legislature have been formed to develop policy and legislation in these areas. Support for this work -- through participation in these planning groups and active promotion of child care programs, elder care programs and parental leave legislation -- is essential to the development of services which can better address the needs of working parents.

Less public attention has been paid to the problems associated with reproductive hazards in the workplace. Education and policy development in this area is critical for the prevention of poor birth outcomes and other reproductive health problems for both men and women. Given the great need in this area, it is the recommendation of this report that the Department of Public Health and Occupational Health Program at the University of Massachusetts focus primary attention in this area, in concert with other appropriate state agencies, such as the Department of Labor and Industries. In light of this immediate need, this report recommends:

** THE EXPANSION OF EDUCATIONAL ACTIVITIES FOR WORKERS, EMPLOYERS AND HEALTH CARE PROVIDERS ABOUT REPRODUCTIVE HAZARDS IN THE WORKPLACE:
The provision of information to those who are most directly affected by potential hazards is the most effective way to insure workplace health and safety. Where scientific uncertainty about a suspected reproductive hazards exists, it is especially important that employers and employees understand the risks that may potentially exist so that they may make the best informed choice about work with suspected reproductive hazards.

** THE ESTABLISHMENT OF A TASK FORCE ON FAMILY, WORK, AND HEALTH TO DEVELOP POLICY GUIDELINES IN THE AREA OF REPRODUCTIVE HAZARDS IN THE WORKPLACE:
A Task Force comprised of representatives of appropriate state agencies and members of the business, labor and women's communities can best address the questions of health and equity raised by the presense of reproductive hazards in the workplace. It is critically important that policy guidelines address the immediate concerns of workers (both male and female) and provide employers and employees with an informed perspective on how best to address both their health and legal concerns.

** SUPPORT FOR STATE-WIDE EFFORTS TO ADDRESS FAMILY CARE ISSUES IN THE WORKPLACE, SUCH AS THE PROVISION OF BETTER CHILD CARE AND FAMILY/DEPENDENT CARE PROGRAMS AND SUPPORT FOR PARENTAL LEAVE POLICIES:
Departmental support for on-going work in the Executive and Legislative branches in this area could help address the pressing needs of working parents for better child care and more flexible parental leave policies. The findings of this report reinforce these efforts by documenting the lack of services currently available to working parents and by pointing to the clear need for additional public and private programs which can help ease the conflict between work and family responsibilities.

INTRODUCTION

The Family, Work and Health Survey was carried out jointly by the Massachusetts Department of Public Health and the University of Massachusetts Medical Center Occupational Health Program in 1987 in an attempt to define and analyze the responsiveness of Massachusetts employers to the special needs of working parents.

From birth through old age, workplace conditions can have a profound effect on the quality of family life. Workplace exposures can affect one's ability to conceive a child or can determine the health of a fetus. Parental leave and child care policies can have a critical impact on the quality of care for newborn infants in the crucial first months of life and beyond. Sick leave policies for working parents can determine the kind of care available to children and elderly relatives in times of need. In many ways, occupational health and family health are integrally connected.

The Family, Work and Health Project sought to address these issues through a survey of Massachusetts chemical and electronics employers. The survey focused on Massachusetts chemical and electronics companies with fifty or more employees. A total of 198 companies were surveyed including ninety percent of the chemical industry and fifty-two percent of the electronics industry in Massachusetts. Overall response rate was very high at 85%.

The results of this survey are presented here in two distinct parts.

Part One of this report addresses issues regarding Reproductive Hazards in the workplace. To what extent are reproductive hazards in use in the workplace? Where they are present, are employers and employees aware of potential reproductive toxins? What policies are in effect to reduce potential risks?

Part Two of this report addresses Parenting and Family Care issues for workers. What has corporate response been to the changing needs of working parents, such as the need for parental leave, child care and support for the care of elderly parents?

Together, these results illustrate the wide range of health issues faced by parents in the workplace and the ways in which workplace conditions can have an impact on family life.

Part One: Reproductive Hazards in the Workplace

The prevalence of human reproductive problems in the United States is significant. Approximately 15% of couples are involuntarily infertile.[1] Twenty percent of pregnancies end in spontaneous abortion between the fourth and twenty-eighth weeks of gestation. Estimates of total pregnancy losses which include subclinical pregnancy loss before the fourth week, range from approximately 40 to 75% of all conceptuses.[2] In the United States, 2 to 3% of newborns have major malformations.[3]

Although the causes of many reproductive problems remain unclear, scientific evidence is accumulating to implicate occupational exposures in the etiology of reproductive impairment and poor pregnancy outcome. Potential occupational reproductive hazards include infectious agents such as cytomegalovirus; physical agents such as heat, radiation, and stress; and a number of chemicals and metals.[4-6]

According to federal estimates, over 14 million workers are potentially exposed each year to known or suspected reproductive hazards on the job. Reproductive disorders, in fact, rank among the top 10 leading work-related illnesses and injuries in the United States.[7]

Although concern about reproductive hazards is often confined to women and pregnancy, scientific data indicate that exposures in the workplace can exert adverse reproductive effects on and through both men and women. Lead exposure, for example, has been associated with decreased sperm count and motility,[8,9] pregnancy loss,[10] premature delivery,[11] and with minor malformations[12] and developmental deficits in offspring.[13]

Reproductive toxins can exert their effects via many mechanisms. Interference with the delicate hormonal regulation of reproductive processes can disturb fertility. High levels of emotional or physical stress[14,15] or exposure to certain pesticides[16] has been shown to disrupt the hormonal regulation of ovulation, leading to irregular menses and temporary infertility in women.

Mutagens are substances that damage the genetic material contained in cells. Significant mutagenic damage to germ cells may lead to death of cells and infertility. Exposure of parents to mutagens may be lethal to the embryo or may lead to genetic disease in offspring. Most known mutagens have also been shown to be carcinogens,[17] a finding that illustrates the important point that agents capable of reproductive harm may also have adverse general health effects. Mutagenic chemicals are in widespread use in industry. They include such substances as ethylene oxide used in the chemical sterilization of operating room instruments, chemotherapeutic agents handled and administered by nurses, metals such as arsenic and certain nickel compounds, and solvents such as epichlorohydrin and methylene chloride.[18] Since mutagens tend to act on dividing cells, sperm production in men--which involves a renewing and ongoing process of cell division and differentiation--may be more susceptible to mutagens than are the oocytes which are primarily at rest in the adult female ovary.[19]

Teratogens are agents that cause birth defects. Susceptibility to teratogens is greatest during the first trimester of pregnancy when the major organ systems of the fetus are developing. The central nervous system, and immune and endocrine systems, however, continue to develop throughout gestation. In addition, a significant amount of fetal growth occurs during the latter weeks of pregnancy. Therefore, exposures during later pregnancy may be associated with growth or functional deficiencies in offspring.[20]

To date, the responses of federal and state agencies to the problem of reproductive hazards in the workplace have been limited. Of approximately 60,000 chemicals in common commercial usage, at least 500 are known or suspected reproductive hazards based on animal or human data. Yet only three -- namely lead, dibromochloropropane, and ethylene oxide -- are currently federally regulated partially because of consideration of reproductive effects.[21]

Under the federal Hazard Communication Standard and the Massachusetts Right to Know Law,[22] workers have the right to "material safety data sheets" which are designed to provide information on the identity and health effects of substances used in the workplace. These material safety data sheets are written by the producers of the substances and unfortunately provide little information regarding reproductive health effects.

Some corporations have responded to health and litigation concerns by developing policies and practices specific to work with reproductive hazards. The federal government estimates that at least 100,000 jobs are now closed to women on the grounds of risk to fetal health.[23] With 1.5 million women giving birth every year, the potential impact of reproductive hazard policies in the workplace is very great.

In December of 1986 the Digital Equipment Corporation released the results of a study that indicated an elevated rate of miscarriage among female production workers in the facility's particulate-free "clean rooms" at their Hudson, Massachusetts facility.[24] Despite methodological problems with the study, within a month of Digital's release of the findings, American Telephone and Telegraph Company banned all pregnant women from their clean rooms.[25]

The exact prevalence of such policies among firms in the United States is unknown. The federal government has estimated that at least 100,000 jobs are now closed to women on the grounds of potential risks to reproductive health.[26] To date, there have been no studies of corporate policies now in effect regarding reproductive hazards in the workplace. How widespread are restrictions on pregnant women? All women? How do policies affect men and women differently? Where substances are known to affect both the male and female reproductive systems, are policies designed to protect both men and women workers? Where reproductive hazards are in use, how many companies have no special policies regarding reproductive hazards?

The Family, Work and Health survey is the first study of its kind to analyze systematically the prevalence and characteristics of employer reproductive hazards policies. Although limited to two particular sectors of Massachusetts industry, the survey has important implications for employers and employees in a variety of industries both in Massachusetts and nationally. The Family, Work and Health survey helps to pinpoint areas where education, training and equitable policy development are most needed.

Part Two: Parenting and Family Care Issues

Improving the health and well-being of families requires attention to workplace conditions, and the support of workers to have families. Interest in family and reproductive issues in the workplace has been spurred in part by the increased participation of women, particularly single mothers, in the labor force over the last two decades. Women currently constitute over 43% of the United States labor force as compared to 33% in 1960.[27] In keeping with the national trend, state statistics from the Department of Labor indicate that by 1986 women made up 47% of the Massachusetts civilian labor force.[28]

Among families in the United States with children under 18 years old, nearly 90% have a household member who participates in the workforce.[29] One in five children lives in one-parent families,[30] and over two-thirds of single mothers are working.[31]

The increase in the numbers of working women with young children has been especially dramatic. In 1970 about 32% of mothers of preschool-aged children were employed nationally. By 1982 half of mothers of preschool-aged children were working, including 77% of mothers of children aged three to five, and 46% of mothers of children under three.[32]

Parents in the workforce experience unique stresses in handling the responsibilities of both their families and their jobs. Although this is true for both males and females, problems related to work and parenting are especially germane to women, many of whom are single parents or are primarily responsible for the care of family members in two-parent households. Employer practices and benefits can play an important role in addressing the special needs of these working parents.

One of the most obvious needs of parents of young children is quality child care which is both affordable and convenient. National estimates reveal that child care services are available for only 54% of the 13 million children in need of care.[33] In Massachusetts, one in every five of the nearly 1.5 million families in the state has a child less than six years old.[34]

Women in general, and women of color in particular, are traditionally segregated into poorly-paid job sectors. Eight percent of Massachusetts families overall, including 23% of black families and 36% of Hispanic families, live below the poverty level. Of these poor families, nearly half have a family member less than six years old and over 40% have a household member working full or part-time.[35] For low and moderate-income families, child care expenses may deplete a significant proportion of earned income.

For prospective parents in the workplace, the extent of parental leave benefits offered by employers is an important concern. The early weeks and months after birth are important for the physical and emotional recuperation of parents from the birthing experience, for familial interaction and bonding with the newborn, and for successful breastfeeding of infants.

The United States is the only industrialized nation that does not directly provide for maternity benefits through national legislation. No federal statute in the United States yet assures health and medical care coverage for prenatal care and delivery, a guaranteed length of leave, or for cash benefits during leave.[36] The closest the United States comes to a national policy on maternity leave is derived indirectly from the provisions of Title VII of the Civil Rights Act as amended in 1979.[37]

The Pregnancy Discrimination Act, a 1979 amendment to Title VII mandates, "Women affected by pregnancy, childbirth or related medical conditions shall be treated the same for all employment-related purposes, including receipt of benefits under fringe benefits programs, as other persons not so affected but similar in their ability or inability to work." The amendment protects the right of women on leave for pregnancy-related reasons to be reinstated without loss of benefits or seniority. Employers are not required under Title VII to provide health or disability plans to employees. However, if employers carry such plans, pregnant women must have the same access to these benefits as non-pregnant employees.

Although a protected leave at childbirth is available to most women working over 20 hours per week, more than half of the firms limit leaves to three months or less, according to researchers at Columbia University.[38] Paid sick leave benefits are available in approximately two thirds of companies. However, even the most long-term workers are eligible for less than four weeks of payment. Few companies have formal policies relating to extended paternity leaves, although some allow a few days off--usually as part of sick leave.

Massachusetts is one of the few states in the nation with specific laws governing maternity leave. The Massachusetts Maternity Leave Law[39] covers all employers of six or more workers. Under the law, full-time female employees are entitled to a minimum of eight weeks maternity leave. Job retention without loss of employment benefits or seniority is guaranteed unless lay-offs for employees in similar jobs have occurred during the maternity leave period. Cash benefits for maternity leave are not mandated under the law. However, accrued sick leave and disability benefits must be provided to women on leave for childbirth under the same terms and conditions that apply to other workers with temporary medical disabilities.

Worksite educational resources and activities can be an important way to make basic health information available to employees. Information about nutrition and the health effects of smoking, drugs, and alcohol can be important to employee and family health. One area particularly vital to the economic and emotional security of many working parents is access to information about family planning options.

Family planning information programs can assist workers in their decisions regarding contraceptive and pregnancy options, and allow for more effective coordination of family and work aspirations and responsibilities. Current national statistics indicate that four out of every 10 women in need of subsidized family planning services lack access to these services.[40] Educational efforts in the workplace designed to increase employee awareness about family planning options and resources can be an important "first step" in assuring that needs in this area are met.

In addition to educational activities, increasing attention is being focused on the need for counseling services for employees experiencing drug, alcohol, and related family problems or conflicts between their work and family responsibilities. Many firms are providing these services through on-site employee assistance programs[41] whereas others may refer employees to outside resources.

The results of the Family, Work and Health survey can play an important role in developing programs which can reduce the stresses felt by working parents as they attempt to integrate and adapt to the demands of their families and their jobs. With this broad range of concerns in mind -- from parental leave and child care to health education and elder care -- this survey attempted to assess the responsiveness of two industries in Massachusetts to the pressures of working parents.

METHODOLOGY

Selection of Industries

The Massachusetts chemical (Standard Industrial Classification # 28)[42] and electronic manufacturing industries (SIC #s 357 & 36) were chosen for this survey. These industries use substances that are known or suspected hazards to the reproductive systems of both men and women or the fetus. Further, in Massachusetts the electronics industry employs a sizable proportion of the state's workforce and is notable for frequently setting the lead in industrial employment practices. As a major component of the Massachusetts economy, the "high tech" industry is looked to for leadership, economic stimulation, and employment. In addition, choosing these sectors allowed us to compare the chemical industry, which is primarily male dominated and is well established, to the relatively newer electronics production industry, which employs primarily females in manufacturing. Appendix A provides a profile of the race and sex composition of the workforce in each of these two industries.

Unit of Analysis

The survey focused on Massachusetts chemical and electronics companies with 50 or more employees. Based on a listing published by the Massachusetts Division of Employment Security,[43] there were 62 chemical and 351 electronics industry employer sites in 1984. These companies employ approximately 165,000 people in Massachusetts.

Sampling

The Division of Employment Security listing groups employers by site, by number of employees and by SIC code. Employers were selected from this listing based on "size group" for the number of people employed. As the list was arranged by site and not by company name, it was possible that a single company might have multiple sites, and/or under multiple SIC codes, depending upon the business operation of the enterprise. Given the low number of chemical companies, 100% sampling of these employers was attempted. Within the electronics industry, stratified sampling according to size groups was conducted. Table 1 shows the number of electronics and chemical employers per size group, the number sampled, and the proportion of employers sampled within each size group. One hundred percent sampling was attempted in those size groups with relatively few numbers of employers. Random sampling of companies within the remaining size groups among electronics employers was conducted.

The development of the sample required that a single employer with multiple sites not appear more than once in the sample and thereby skew the results. In cases where sampling produced more than one site from the same company, all but one site was randomly dropped from the sample. Nine electronics sites from seven companies and one duplicate site from a chemical company were in this category. The lowest proportion of companies sampled within any one size group was 44%. There was a low variance of sampling rate by size group within each of the two industries.

TABLE 1
Sampling and Response Rate

		NUMBER OF EMPLOYEES					
		50-99	100-249	250-499	500-999	1000+	TOTAL
CHEMICAL INDUSTRY	# SITES	36	13	9	2	2	62
	# COMPANIES	36	12	9	2	2	61
	# SAMPLED	36	12	9	2	2	61
	% SAMPLED	100	100	100	100	100	100
	# APPROPRIATE	31	11	9	2	2	55
	# RESPONDED	27	10	8	2	2	49
	% RESPONDED	87.1	90.9	88.9	100	100	89.1
ELECTRONICS INDUSTRY	# SITES	95	128	52	32	44	351
	# COMPANIES	94	125	51	30	41	341
	# SAMPLED	51	74	25	16	18	184
	% SAMPLED	54.3	59.2	49.0	53.3	43.9	53.8
	# APPROPRIATE	49	71	23	16	18	177
	# RESPONDED	41	59	19	14	16	149
	% RESPONDED	83.7	83.1	82.6	87.5	88.9	84.2
TOTAL SAMPLE	# SITES	131	141	61	34	46	413
	# COMPANIES	130	137	60	32	44	403
	# SAMPLED	87	86	34	18	20	245
	% SAMPLED	66.9	62.8	56.7	56.3	46.5	60.9
	# APPROPRIATE	80	82	32	18	20	232
	# RESPONDED	68	69	27	16	18	198
	% RESPONDED	85.0	84.1	84.4	88.9	90.0	85.3

The 413 employer sites provided a total of 403 companies. Sampling yielded a total of 245 companies. Although the sample size was small relative to many surveys, the proportion of companies sampled from the population was very high. In the case of chemical companies, it neared 100%; for electronic companies, slightly over half of the population was sampled. This high level of sampling provided a high possibility of variety of response from the companies sampled compared to a smaller proportion of the sample from the population.

Survey Process and Respondents

Upon selection of the sample, telephone calls were made to employers to ascertain the full name, title, and address of a targeted respondent. Companies were asked to identify the person with the most knowledge about family, work, and health issues. (Examples given to explain these issues were child care, maternity leave, and substances in use in the workplace.) During these calls, the interviewer attempted to obtain the name and title of a targeted respondent in the following order: medical director, occupational health nurse and safety staff, personnel director, plant manager, or owner. Table 2 shows the distribution of the title of the respondent according to size group.

Individually-addressed letters explaining the purpose of the survey and requesting participation were sent to the targeted respondents. Appendices B and D contain sample copies of the cover letter and the actual survey administered. Letters were sent out in batches of approximately 30 every two weeks, for two months, with interviews conducted approximately a week to a week and one-half later.

For each batch of companies, random assignment was made to three interviewers trained at the Center for Survey Research in Boston. The interviewers made from 1 to 19 phone calls to make contact with the respondent of each company, with an average of 3.7 phone calls per survey. A refusal was defined to require a clear statement from the targeted respondent that they were unwilling to participate.

In cases where the targeted respondent was unable to engage in the interview due to unavailability or lack of knowledge, a request was made to interview an alternate respondent. In a few cases, completion of the questionnaire required two respondents for the same employer. The length of time for the interviews ranged from 7 to 35 minutes, including all phone calls, for an average of 14.6 minutes per interview.

The survey was conducted within a two month period during the summer of 1987. This was a short interval. It was unlikely, therefore, that within this time period any events occurred within the Massachusetts economy and community of employers that would have differentially affected respondents across the sample. As such, it can safely be said that there were no historical factors affecting the results.

TABLE 2
TITLE OF RESPONDENT BY SIZE GROUP

	SIZE GROUP					
TITLE	50-99	100-249	250-499	500-999	1000+	TOTAL
MEDICAL DIRECTOR	4	0	3	2	5	14
	5.9%	0.0%	11.1%	12.5%	27.8%	7.0%
OCCUPATIONAL	0	0	2	3	3	8
HEALTH NURSE	0.0%	0.0%	7.4%	18.8%	16.7%	4.0%
PLANT/COMPANY	1	3	3	2	2	11
NURSE	1.5%	4.6%	11.1%	12.5%	11.1%	5.6%
PERSONNEL	32	48	15	6	4	105
DIRECTOR	47.1%	69.8%	55.6%	37.5%	22.2%	53.0%
PRESIDENT/OWNER/	20	10	1	0	0	31
MANAGER	29.4%	14.5%	3.7%	0.0%	0.0%	15.7%
SAFETY PERSONNEL	3	1	1	0	0	5
	4.4%	1.5%	3.7%	0.0%	0.0%	2.5%
OTHER	7	5	1	2	3	18
	10.3%	7.3%	3.7%	12.5%	16.7%	9.1%
UNKNOWN	1	2	1	1	1	6
	1.5%	2.9%	3.7%	6.3%	5.6%	3.0%
TOTAL	68	69	27	16	18	198
	34.3%	34.9%	13.6%	8.1%	9.1%	100.00

Note: Percents do not add up to 100 due to rounding.

Interviewer Reliability

An analysis of patterns of answers in relation to interviewer indicated a small variation in behavior of the three interviewers. The only notable pattern was that one of the interviewers, for the first bi-weekly series of companies which were interviewed, tended to obtain a higher proportion of "yes" answers to questions than the other interviewers. From discussions among interviewers during the survey process, it was found that this interviewer was more likely to require a respondent to answer strictly "yes" or "no" to such questions, whereas the other two interviewers allowed a higher variability of response.

Subsequent to these discussions, it was decided that interviewers should attempt to obtain only yes/no responses to questions with dichotomous answers, but interviewers were allowed to obtain other answers when respondents strongly felt that such a dichotomy was inappropriate to the situation in the company. This pattern continued for the remainder of the interviewing process.

As the response provided may have therefore been due specifically to interviewer behavior, it is possible that the proportions reported for these questions are inaccurate. But in what direction? It is most likely that for all questions with dichotomous responses, the affirmative proportions ("yes" answers) are undercounts of what occurred in the sample rather than overcounts. This discrepancy is suggested by the initial pattern of responses mentioned above obtained by one interviewer that was different from that of the other interviewers.

Response Rate

From the total population of 403 companies, 245 were sampled. After sampling, it was necessary to discount 13 employers; at the start of the interviews it was determined that these companies had fewer than 50 employees or that they were engaged in primarily non-fabrication operations, such as distribution of products or warehousing.

Of the 232 remaining employers, responses were obtained from a total of 198 employers for an overall response rate of 85%. Table 1 shows the response rate by industry and size group. There appeared to be no relationship of response rate to either type of company or size group.

Particularly for private companies, where there is frequently an urgency of time and a concern with confidentiality, this response rate was particularly high. And given this high rate, the results can be said to be well representative of the situation among the Massachusetts chemical and electronics companies.

However, the survey had a total of only 198 respondents, due primarily to the small population size of the number of companies in Massachusetts from which to sample. This is a relatively small sample size in that it limited the capability of performing statistical analyses which could have provided information about relationships between particular variables.

In addition to the high response rate, there was a high completion rate for the surveys. Ninety percent of the surveys were totally completed with only 4 of the respondents refusing a question within a survey. The results, therefore, can be said to have a high degree of reliability across the sample.

Gender Stratification

For analysis purposes, companies were classified as either male-intensive, female-intensive, or even. This was based on respondent reports of actual numbers of production workers in each sex, proportions of workers in each sex, or verbal statements of "more men," "more women," or "even." In those cases where respondents reported numbers or proportions, companies were classed as one of the two gender dominance categories when the difference in proportions was more than 5%.

Reproductive Hazard Identification

Respondents were asked to identify substances in use in the workplace from a list of 12 substances with some potential for use in one or both industries. Among this list were four known reproductive hazards. Table 3 lists the four substances, some of their industrial uses, and their known reproductive health effects. A substance was classified as a known hazard if available human data showed one or more adverse reproductive effects in males or females. According to this criterion, four substances -- lead, radiation, mercury, and glycol ethers -- were classified as known hazards. Lead and radiation have been shown to have multiple adverse reproductive health effects on both men and women, as well as the conceptus. Although the organic form of mercury (methyl mercury) is a known human teratogen, the inorganic and metallic forms have been less definitively linked with embryotoxicity in animals and with menstrual disorders and impotence in humans. Ethylene glycol ethers are known human spermatotoxins, although teratogenic effects have also been shown in animals.

In addition to these four substances, respondents were also asked about use of another eight substances which may be of concern in relation to reproductive health. While convincing human data on these possible reproductive hazards is inadequate, these substances have been associated with adverse reproductive effects in animal studies. These eight possible hazards include: arsenic or arsine gas, benzene, carbon disulfide, formaldehyde, methylene chloride, vinyl chloride, trichloroethane or trichloroethylene, and toluene. Many of these substances are organic solvents. In some studies, exposure to organic solvents during pregnancy has been associated with an increased frequency of congenital malformations in offspring. In addition, mutagens were put in this category. (See Appendix C)

Analysis

Survey forms were coded for all responses. Data were moved into a Statistical Analysis System (SAS) database for data management and analysis purposes. The analysis was primarily descriptive. Frequency counts and proportions of categorical responses on questions were investigated. Analysis of cross-tabulations were made to analyze the proportions of response between two variables. In a few case, inferential statistics were developed to test relationships between variables. Due to the small sample size, numerous multivariate analyses were not feasible. This was a very small number upon which to attempt to investigate the relationship of factors known about the company (such as size group, industry, and gender stratification of the workforce).

TABLE 3

KNOWN REPRODUCTIVE HAZARDS

(1) Glycol Ethers

Uses: Production of plasticizers and finishes for cars, trucks, heavy equipment, appliances and metals; industrial solvents for electric circuit board and semi-conductor manufacture, photographic and textile applications and cleaning solvents; component of inks and jet fuel additive

Health Effects: Teratogenic (in animal studies)
Spermatotoxin (in animal & human studies)
(for Health Effects see notes 44-66)

(2) Lead

Uses: Storage batteries, paint, ink, ceramics, ammunition; solder component

Health Effects: Spermatotoxin[47-50]
Spontaneous abortion[51]
Minor malformations[52]
Behavioral deficits[53]
Preterm delivery[54]

(3) Organic Mercury (methyl)

Uses: Fungicide; folial sprays; preservative solutions for wood, paper pulp, textiles, leather

Health Effects: Teratogenic (neurologic deficits)[55,56]

(4) Mercury (inorganic)

Uses: Barometers, thermometers; mercury arc lamps; switches; flourescent lamps; mirrors; dentistry; pharmaceuticals; agricultural chemicals; paints; electrical production

Health Effects: Possible reduced fertility in males and females
Reduced spermatogenesis in animals[57]
Decreased libido in male workers with high exposure[58]
Menstrual disturbances[59]
Fetotoxic and embryolethal in animals[60,61]

(5) Radiation (ionizing)

Uses: Electron microscopes; medical diagnosis and treatment

Health Effects: Spontaneous abortion
- Teratogenesis (microcephaly, eye malformations, mental retardation)
- Growth retardation
- Mutagenic
- Carcinogenic (esp. breast and bone marrow)
- Infertility
- (for Health Effects see notes 62-64)

PART ONE: Reproductive Hazards

FINDINGS

Questions regarding reproductive hazards in the workplace were designed to gain information in three areas: 1) use of reproductive hazards in the workplace; 2) knowledge of reproductive hazards including relevant education and training available to management and workers and; 3) employer policies and practices regarding reproductive hazards.

Gender stratification of the production workforce was investigated in relation to the areas mentioned above. In this survey, 78 companies (39%) were male-intensive, 90 companies (45%) were female-intensive, and 309 companies (15%) employed an even proportion of male and female production workers.

Unionization of the production workforce was also investigated as a factor. In this survey 18% (35 companies) reported having unionized workforces, 81% (158 companies) were not unionized, and one respondent refused to answer. By industry, 35% of the chemical industry workforce is unionized as compared to 13% of the electronics industry.

Use of Reproductive Hazards

Seventy-three percent (145) of companies reported at least one of the 12 identified substances in use. Slightly over half of all of the companies (105) surveyed reported at least one of the known reproductive hazards in use. Thirteen percent of all companies reported mercury in use; 18% reported radiation in use; 35% reported lead in use; and 27% reported glycol ethers in use. Overall, these known reproductive hazards were found to be equally in use in the chemical and electronics industries, except for the use of lead which was more commonly used in electronics production (38 v. 27%).

In order to gain a broader picture of the extent of use of potential hazards in the workplace, respondents were also asked about the eight substances which animal studies suggest may present some risk to reproductive health (arsenic or arsine gas, benzene, carbon disulfide, formaldehyde, methylene chloride, vinyl chloride, trichloroethane or trichloroethylene, and toluene). Sixty-one per cent of all companies reported at least one of these possible reproductive hazards in use. Figure 1 illustrates the proportions of companies with known or possible reproductive hazards in use.

Knowledge of Reproductive Hazards

Knowledge of reproductive hazards was tested in two ways. First, companies were asked if there were "any substances in use at your workplace that your company has to be careful about because they might affect reproduction." Response to this question was then compared to previous questions about specific hazardous substances in use. Among the 105 companies (53%) reporting one or more of the four known reproductive hazards in use, only 40% acknowledged that they had a substance present which they had to be careful about because of its possible effects on reproduction. (See Figure 2)

Figure 1

Proportion of Companies Reporting At Least One Substance In Use

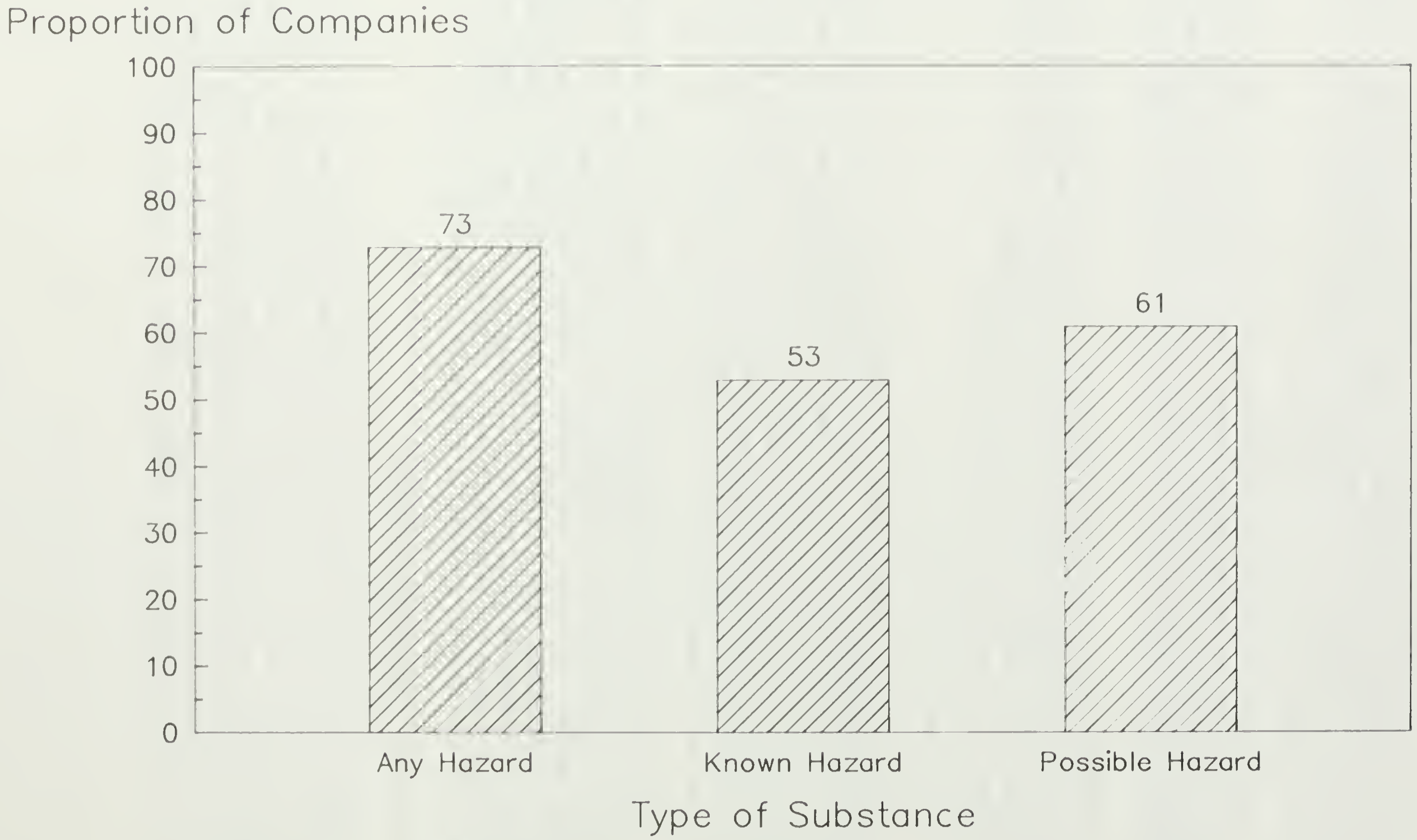
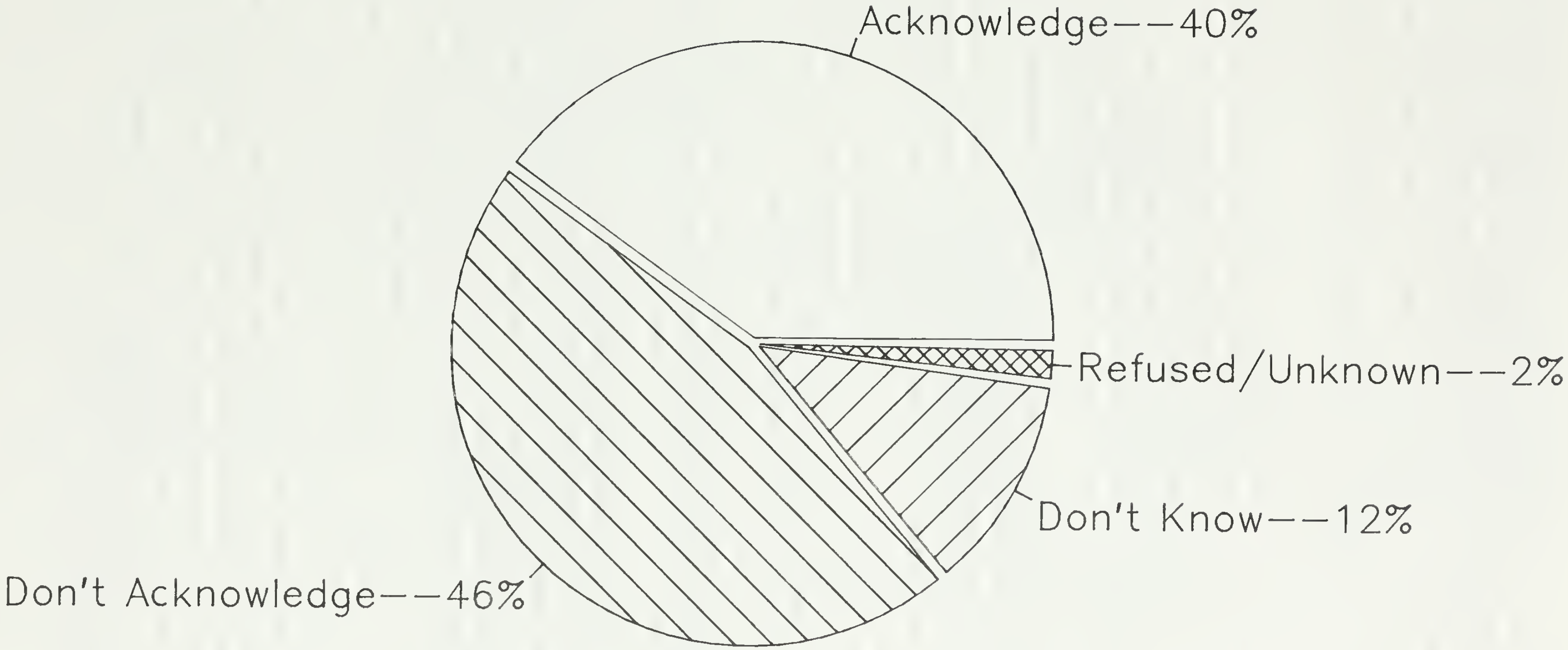


Figure 2

Company Knowledge of Presence of Reproductive Hazards



Substances In Use
Which Might Affect Reproduction

Total number of companies with known hazards in use = 105.

Chemical companies were more likely to acknowledge the presence of a reproductive hazard than electronics companies (46% v. 38%), even though the proportions of companies reporting a known hazard in use did not differ at all by industry. The larger companies were more likely to acknowledge the presence of reproductive hazards than smaller ones; 54% of companies with 500 or more employees answered affirmatively whereas only 35% of companies with fewer than 500 employees did so. Unionization was not a significant factor in knowledge of reproductive hazards.

Second, interviewees were asked about the training and education they had received on reproductive hazards in the past two years, as well as the kind of training and education provided for workers. Over two-thirds of respondents (134 or 68%) received no training nor education on hazards to the reproductive system, even though persons interviewed were identified by the company as the ones most likely to have knowledge of family, work, and health issues. Of the remaining one-third of the respondents (61 or 31%) who reported having received some training on reproductive hazards in the past two years, most received some literature (85%) and/or attended a single workshop or seminar (52%). Respondents in the chemical industry were slightly more likely than persons in the electronics industry to have received some training or education on hazards (38 v. 29%). The larger the company, the more likely it was that the respondent received training on reproductive hazards: about one-fourth of respondents in companies employing 50 to 99 workers received training (24%) as compared to 68% of interviewees in firms with 500 or more employees. Respondents from unionized companies were more likely than respondents from non-unionized companies to have received some form of training on reproductive hazards (37 v 29%).

Respondents were asked if the company provided training or education for employees working with any hazardous materials (not only the ones pertaining to the reproductive system). Five percent of all companies provide no training at all for such workers. An additional 10% reported no training because they claimed to have no hazards in their worksites. All of the companies reporting absence of hazards in their worksites were electronics companies. Thus, workers in the chemical industry were more likely to have received some form of health and safety training (96%) as compared to workers in the electronics industry (80%) although it was found that they were not any more likely to have received specific information on reproductive hazards. A moderate proportion of the smallest companies offered training to workers (66%), while all companies with 250 or more employees offered some kind of health and safety training. Unionized and non-unionized companiews were equally likely to provide training or education for workers (83 v 84%).

Of the 166 companies that provide health and safety education to workers who work with any hazardous substances, slightly more than half (54%) include some information on reproductive risks. Most of the health and safety training provided to workers came solely in the form of Right-to-Know training or provision of Material Safety Data Sheets (MSDS). This finding points to the importance of including information about reproductive effects on MSDS forms, which may often be the only source of information about health hazards available to workers.

Companies in size groups of fewer than 1000 employees were about as equally likely to offer training specific to reproductive hazards (45 to 59%), while 83% of companies with more than 1000 employees offered this training. Of those 166 companies offering any training, there were no differences in proportion between the two industries nor between unionized and non-unionized companies in providing information specific to reproductive hazards.

Almost two-thirds of respondents from companies that had one or more of the listed known reproductive hazards in use (63.5%) acknowledged that they had not received any special training on reproductive hazards, and over one third said that they had received such training. However, general health and safety training to workers was higher. One hundred of the 105 companies with known hazards to reproduction offered some kind of training to employees working with hazardous substances. Of these 100 companies, 60% said that training included information on reproductive hazards, 34% said that the training did not include information on such hazards, and 6% said that they did not know.

In narrowing the analysis from all companies to companies with a known reproductive hazard in use, only a slight increase in the amount of training provided on reproductive hazards to both respondents and workers was found. The use of substances known to be reproductive hazards was not, thereby, related to an increased amount of training provided by companies.

Reproductive Hazards Policies and Practices

A series of questions was designed to assess reproductive hazard policies and practices in each of the companies. Companies were asked about both mandatory company restrictions as well as transfers given at workers' requests. Figure 3 illustrates the proportions of companies with restrictive and transfer policies. The following is an analysis of mandatory company restrictions on workers followed by an analysis of transfer policies.

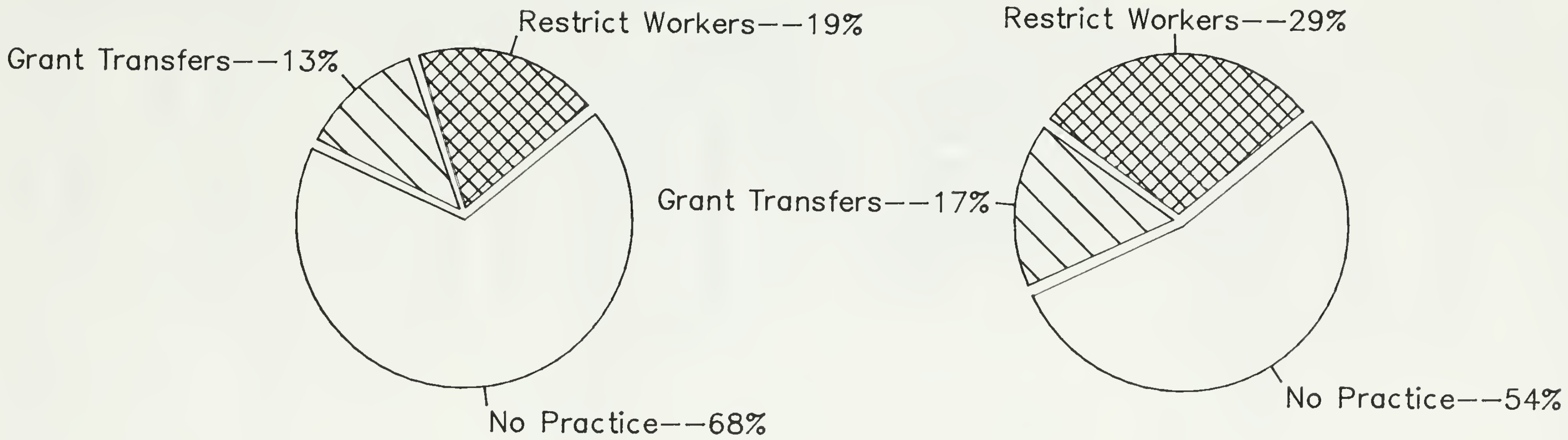
Respondents were asked if their company ever "restricts any workers from working with certain substances or in areas or occupations which may affect reproductive health." Of the 37 companies that restricted workers due to reproductive health concerns, many restricted more than one category of worker (such as pregnant women and women trying to conceive) or restricted workers for more than one substance (e.g., for lead and toluene). These 37 companies thus had a total of 58 restrictions. For purposes of the following analysis, each restriction is treated independently.

Restrictions came in a number of different forms. Some companies restricted workers from work with a particular substance (lead) or class of substances (teratogens); others restricted workers from a work activity (such as heavy lifting) or a work area (such as lab work). Still other restrictions were non-specific, or very loosely defined (such as "any chemical"). Table 3 reports the 58 reproductive hazard restrictions by category of worker and reason for restriction.

Overall, companies restricted five categories of workers ranging from the broadest categories of "all women," and "women of childbearing age" to the more narrow categories of "pregnant women," "women trying to conceive," and "men whose partners are trying to conceive." All but one restriction applied to women only. By far, the greatest number of restrictions were placed on pregnant women. Of the 58 restrictions, 39 applied to pregnant women, nine restrictions applied to "all women," seven applied to "women trying to conceive," two applied to "women of childbearing age," and one restriction applied to "men whose partners are trying to conceive." (See Figure 4)

Figure 3

Reproductive Hazard Policies



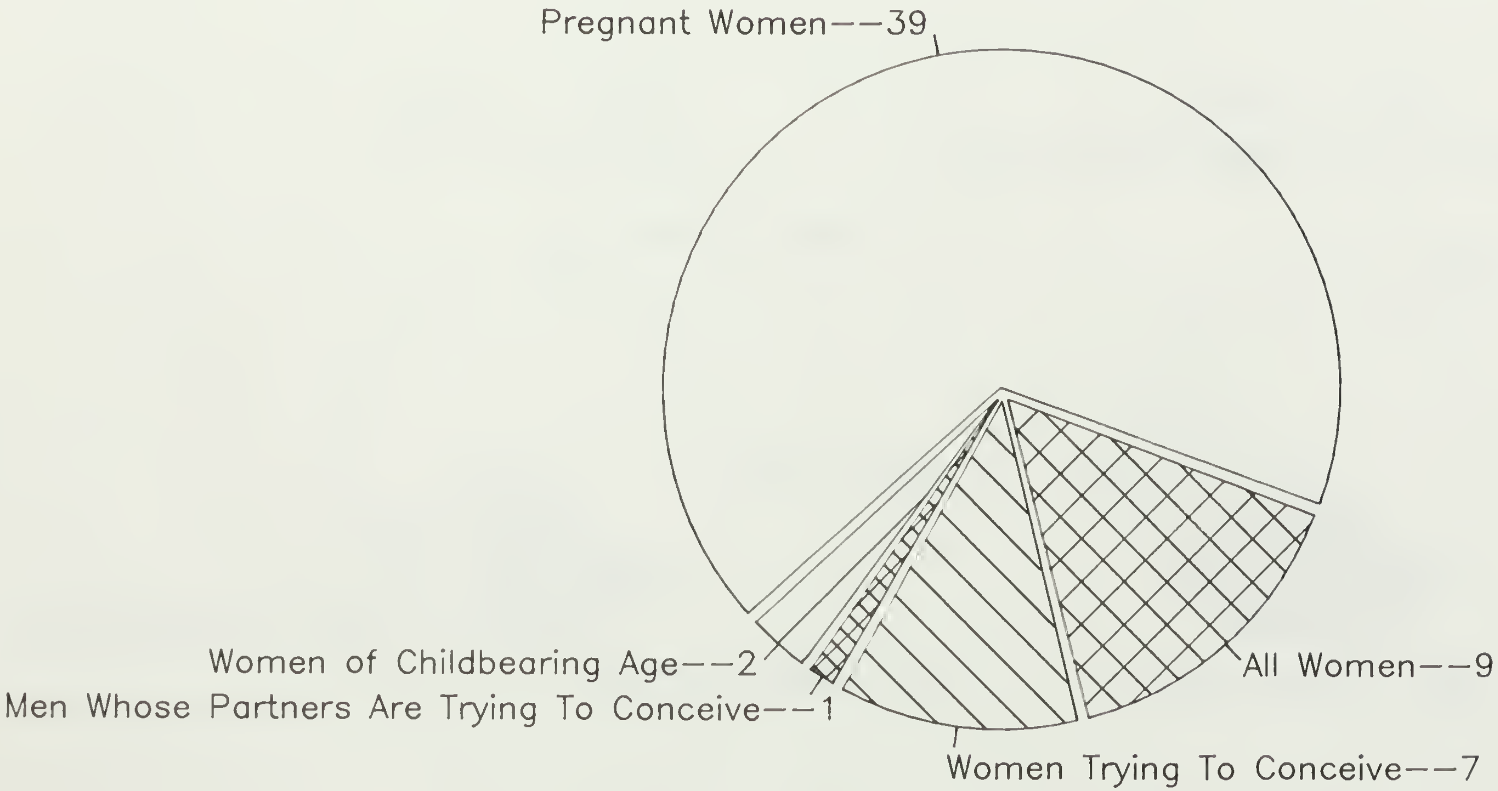
All Companies
Total = 198

Companies With Known Hazards
Total = 105

Known hazards are: glycol ethers, lead, mercury, or radiation.

Figure 4

Reproductive Hazard Restrictions



Total of 58 restrictions in
37 companies.

TABLE 3
REPRODUCTIVE HAZARD RESTRICTIONS
(By Category of Worker and Reasons for Restriction)

Pregnant Women (39 Restrictions)

Substance	Work Area/Activity	Other Reason
Lead (6)	Labs (3)	"none-specific" (2)
Radiation (3)	Plating area (3)	Any chemical (2)
TCE (2)	Heavy lifting (3)	M.D. advice (1)
Glycol ethers (2)	Soldering (2)	
Mercury (1)	Wafer fabrication area (3)	
Teratogens (1)	Organic solvent area (2)	
Pesticides (1)	Painting area (2)	
	"Parting" area (1)	

All Women (9 Restrictions)

Substance	Work Area/Activity	Other Reason
Lead (1)	Soldering (2)	NONE
Halothane (1)	Heavy lifting (1)	
Toluene (1)	Plating area (1)	
Procion dyes (1)		
TCE/TCA (1)		

Women Trying to Conceive (7 Restrictions)

Substance	Work Area/Activity	Other Reason
Radiation (2)	Diffusion Area (1)	NONE
Teratogens (1)	Labs (1)	
Glycol Ethers (1)	Plating Area (1)	

Women of Childbearing Age (2 Restrictions)

Substance	Work Area/Activity	Other Reason
Teratogens (1)	NONE	NONE
Lead (1)		

Men Whose Partners are Trying to Conceive (1 Restriction)

Substance	Work Area/Activity	Other Reason
Teratogens (1)	NONE	NONE

Total of 58 restrictions in 37 companies

NOTE: Numbers in parentheses are number of restrictions found for that reason across all companies.

All 37 companies with some restrictions restricted the work of pregnant women; further, seven of these companies systematically restricted the work of all women or women of childbearing age.

A series of questions was designed to assess what happens to workers when they are required to leave allegedly hazardous work. Of the companies that restricted pregnant women, 92% offered the option of transfer to another job; all of these companies offered retention of the same rate of pay during transfer. Fifty-nine percent of companies offered restricted pregnant workers the option of a leave of absence. Of the companies which offered a leave of absence, 78% retained worker health benefits, 78% offered at least partial wage retention, and 83% retained seniority during the leave. Five companies restricted women who were trying to conceive. Each of these companies offered the option of transfer to another job with retention of the same rate of pay during transfer. The one company that restricted men whose partners were trying to conceive offered the same benefits.

A number of questions were designed to determine what factors, such as type of industry, presence of a reproductive hazard, size of company, unionization and sex stratification of the workforce, were associated with the establishment of a restrictive reproductive hazard practice or policy. Industry was not a determining factor: chemical and electronics companies were equally likely to have restrictions (chemical - 20%; electronics - 19%).

Companies with restrictive policies or practices were more likely to have reported one or more of the four known reproductive hazards in use than companies without restrictions. Of the 37 companies with restrictions, 29 (or 78%) reported a known reproductive hazard in use. Of the 160 companies without restrictions, less than half (76 or 48%) reported one or more of the four known reproductive hazards in use.

A separate analysis was performed on the 105 companies that reported at least one known reproductive hazard in use (53% of sample). In this subgroup, 29% (30 companies) restricted workers. These companies, with a known reproductive hazard in use, were nearly 50% more likely than the overall sample to restrict workers. In contrast, 61 (58%) of the companies with a known hazard did not restrict. Of this subsample of companies with known hazards, one-half neither restricted workers from working with such hazards nor granted transfers to workers concerned about reproductive hazard health effects.

The size of the company had an effect on the likelihood of restricting workers. Thirteen per cent of companies employing less than 500 workers restricted, whereas 47% of companies with 500 or more workers did so. Twenty-six percent of the unionized companies restricted workers as compared to 17% of the non-unionized companies.

The ratio of men to women appeared to bear little relationship to the establishment of company restrictions: 23% (7 of 30) of the "even" companies restricted workers; 22% (17 of 78) of the "male" companies restricted workers; and 16% (14 of 90) of the "female" companies restricted workers.

More significant was the relationship between sex stratification and the kind of restrictive policy or practice in place. Companies that restricted women as a class (all women or women of childbearing age) were more likely to have a male-intensive production workforce. A related finding was that of the seven companies which had such restrictions, six (86%) employed predominantly men (with male/female gender ratios averaging 6.5 to 1), whereas only 42% of the entire sample was male intensive. On the other hand, companies were much more likely to restrict only pregnant women or women trying to conceive if there was an even or greater proportion of women in production. Of the 27 companies with such restrictions, only 11 (41%) employed predominantly men. In analyzing the prevalence of specific restrictive practices within different forms of sex stratification, it was found that 24% of male-intensive companies restricted all women, 14% of even-proportioned companies restricted all women and 7% of female-intensive companies restricted all women.

Reflecting this trend, chemical companies, which generally employ a greater percentage of men than women, were more likely than electronics companies to restrict the work of all women. Whereas 36% of the restrictions in the chemical industry applied to "all women" (5 of 14 restrictions), only 11% of the restrictions in the electronics industry applied to "all women" (4 of 44 restrictions).

Voluntary Transfer Policies

Companies that did not have restrictive practices were asked if they ever "grant transfers due to workers' concerns about reproductive hazards." Twenty-six or 13% of all companies interviewed answered "yes" to this question. Since a single company could have more than one criterion for transfer (for different substances or categories of workers), these twenty six companies had a total of 40 different transfer practices, as summarized in Table 4.

Only women were permitted to transfer voluntarily out of jobs because of concern about reproductive hazards (see Figure 5). Nearly all of these companies (24) granted transfers to pregnant women. All of the transferred pregnant women were reported to retain the same pay rate and seniority during their transfer to another job.

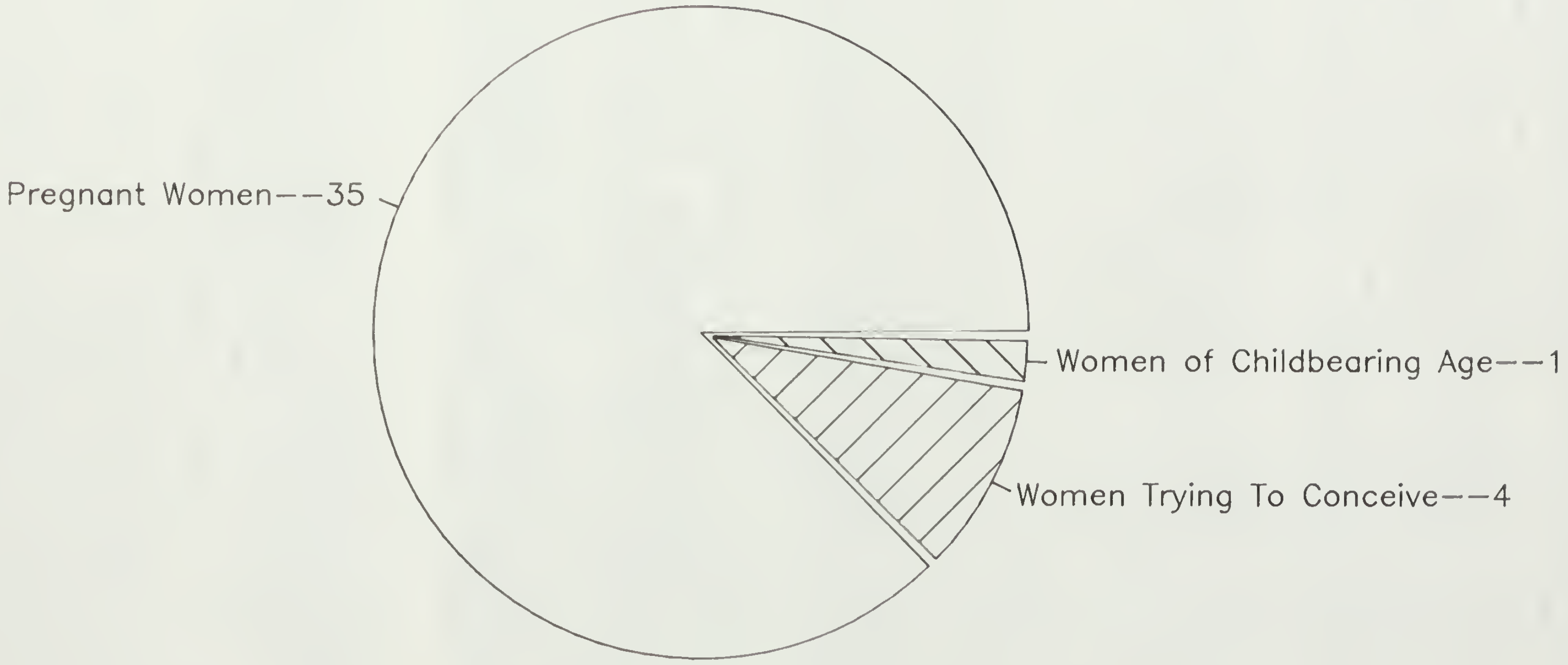
Companies with an even proportion of male and female employees were about as likely as female-intensive companies to allow employees to transfer from jobs because of worker concern about reproductive hazards (22% and 19% respectively). In contrast, predominantly male companies did so only 11% of the time.

Type of industry also appeared to be a factor in determining the likelihood of company transfer practices. Although 20% of electronics companies allowed women to transfer because of concern about reproductive hazards, only 5% of chemical companies allowed such transfers. This difference may be related to the fact that electronics companies are more likely to employ an even or greater percentage of women in production than chemical companies.

As with restrictive practices, the larger companies were more likely to grant transfers than smaller ones. Companies in the two lowest size groups (50-99 and 100-249 employees) were least likely to grant transfers (11%). Middle size companies of 250-499 employees more than doubled this proportion at 26%. The two largest size groups (500-999 and 1000 or more) had proportions of 38% and 40% respectively. Of the 156 companies not restricting workers, non-unionized companies (23 or 18%) were more likely than unionized companies (2 or 18%) to allow workers to transfer because of worker concern about reproductive hazards.

Figure 5

Reproductive Hazard Transfers



Total of 40 transfers in
26 companies.

TABLE 4
REPRODUCTIVE HAZARD TRANSFERS
(By Category of Worker and Reasons for Transfer)

Pregnant Women (35 Transfers)

Substance	Work Area/Activity	Other Reason
Lead (3)	Soldering (3)	M.D. advice (4)
Industrial cleaners(1)	Wafer fabrication area (2)	None specific (4)
Radiation (1)	Lab areas (2)	Individual situation (2)
Acetone (1)	Plating area (1)	Any chemical (1)
Degreasing agents (1)	Chemical area (1)	
TCE (1)	Assembly (1)	
Formaldehyde (1)	Machine shop (1)	
Methylene chloride (1)	Heavy lifting (1)	
All solvents (1)	CAD machine work (1)	

Women Trying to Conceive (4 Transfers)

Substance	Work Area/Activity	Other Reason
Industrial cleaners (1)	Plating area (1)	None specific (1)
Formaldehyde (1)		

Women of Child-bearing Age (1 Transfer)

Substance	Work Area/Activity	Other Reason
NONE	Semi-conductor lab (1)	NONE

Total of 40 transfers in 26 companies.

NOTE: Numbers in parentheses are number of transfers found for that reason across all companies.

Of the 75 companies with one of the four listed known hazards that do not restrict, 24% (18) granted voluntary transfers to workers concerned about use of reproductive hazards and 30.7% (23) did not grant transfers; the remainder said that the situation had not arisen or there were no reproductive hazards in use.

In addition to answering questions regarding restrictions and transfers, three respondents in our survey volunteered the information that they modified workers' jobs to avoid or minimize exposure to potential reproductive hazards. In this way, workers could limit hazardous exposure without leaving their jobs. No explicit question was designed to assess the extent of this practice.

Pregnancy and Privacy Issues

Because implementation of corporate reproductive hazards policies and practices depends on company knowledge of workers' reproductive status, a series of questions was designed to determine the methods by which companies obtain this information. Almost half (98) of the companies in the survey take a health history when hiring employees. Larger companies were much more likely to do so than smaller companies. Among companies with less than 500 employees, 30% take a health history, whereas 85% of companies in the two largest size groups did so. Whereas 80% of the unionized companies took a health history, 41% of the non-unionized companies did so.

Of the 98 companies taking a health history, one-third (33 companies) asked about current pregnancy status when taking a health history at hire. In addition, 22% of companies that take a health history asked about outcomes of prior pregnancies when hiring, and two companies (2%) conducted pregnancy tests when hiring women workers.

Unionized companies were somewhat more likely to ask about pregnancy status than non-unionized companies (50% v. 27%) and male-intensive companies were also more likely to ask than female-intensive companies and even-proportioned companies (44% v. 28% v. 18%); industry type did not differentiate responses on this question. A multivariate logistic regression analysis on the factors of unionization, gender stratification and industry indicated that unionization may be the primary factor in accounting for companies asking women this question when hiring.

For asking about a history of prior pregnancies, unionization did not differentiate between companies, whereas chemical companies were more likely to ask than electronics companies (29% v. 17%), and male intensive companies were more likely to ask than female or even-proportioned companies (33% v. 14% v. 9%). In a logistic regression analysis of the same three variables on this question, male-intensive companies had a possible predictive effect on likelihood of asking this information of new women hires. Interestingly, the companies that employed more men than women were also somewhat more likely to restrict women workers for work with reproductive hazards than companies that employed more women than men (22 v. 16%).

The larger companies showed a higher likelihood of asking about current pregnancy status. Proportions among companies in the three lowest size groups ranged from 13 to 32% whereas companies in the two highest size groups had proportions of 53 to 71%. Similarly, companies in the two lowest size groups asked about outcomes of prior pregnancies in proportions ranging from 8 to 10%, whereas companies in the three largest size groups asked in proportions of 27 to 50%.

A question was designed to assess whether companies ask women workers to let the company know when they become pregnant. Of all of the companies surveyed, 43% (86 companies) asked that women workers let the company know when they are pregnant. Larger companies were much more likely to make this request of their female workers than did smaller ones. The proportions for companies in the two largest size groups ranged from 67 to 78%, whereas for the three smallest size groups the proportions ranged from 16 to 38%. Unionized companies were slightly more likely than non-unionized companies to ask that workers let the company know when they are pregnant (43 v 34%).

Six companies asked that women workers let them know when they are trying to get pregnant, and three companies asked women workers about their fertility status (use of contraception or sterilization). Two of these companies asked male workers about their fertility status and also asked that men let them know when their partners were trying to get pregnant. The number of companies in the sample was too small to determine if there was a variation based on size of company.

DISCUSSION OF FINDINGS

Results of the Family, Work and Health Survey raise important concerns about corporate response to the problem of reproductive hazards in the workplace. In general, the survey revealed three interrelated problems: (1) corporate use of substances potentially hazardous to the reproductive system is high; (2) respondent knowledge and worker education about reproductive risks is low; and (3) corporate exclusionary and transfer practices often bore little relationship to current scientific knowledge about the effects of substances or categories of workers truly at risk.

Use of Hazards

By the very nature of their production processes, the manufacturing industries represented in the survey are chemical-intensive. The list of four known reproductive hazards designated in the survey is by no means an exhaustive depiction of concerning exposures that might occur to workers employed in chemical and electronics manufacture. Yet utilizing only the subset of substances known to be reproductive hazards, 53% of the comaonies were found to report at least one in use in the workplace. When considering use of known or potential reproductive hazards, three-quarters of all companies were found to use at least one potential reproductive hazard in their workplace.

While the survey was able to determine the use of hazardous substances, it was unable to determine actual levels of exposure. Companies with awareness of the risks posed by the use of reproductive hazards may employ health and safety practices such as engineering controls or extensive use of protective equipment.

Awareness of Hazards

Overall, awareness of reproductive risk was low, given the prevalence of hazards present in both the chemical and electronics industries. Although 105 firms were found to have at least one of the four listed known reproductive hazards in use, only 40 per cent of respondents from these firms acknowledged that substances present in their workplaces might be harmful to the reproductive system. It is possible that respondents were aware of the presence of potential reproductive hazards at the worksite but felt that levels commonly encountered by workers did not pose reproductive risks. With the limitations of a telephone survey, it was impossible to obtain exposure assessments necessary to determine if this factor influenced responses. Although 95% of the companies reporting at least one known reproductive hazard in use provided some form of health and safety training to workers, only 60% of this group included information on reproductive risks to employees. Thus, a substantial proportion of employees who work with reproductive toxins on the job are not made aware of the potential risks from these substances. The extent of reliance on Material Safety Data Sheets for information about reproductive health hazards is also problematic since many MSDSs include little or no information about reproductive risks.

In addition to the low level of worker training on reproductive hazards, many companies with known reproductive hazards in use had no policies or practices specific to the use of these substances. Of the 105 companies that had one of the four reproductive hazards designated in our study in use, only 46% of these 105 companies had reproductive hazard policies in the form of restrictions or transfers.

Policies

This study is the first in the United States to systematically investigate the prevalence of such mandatory corporate exclusionary practices. In 1985 the Office of Technology Assessment estimated that at least 15 of the Fortune 500 corporations had implemented exclusionary policies that selectively restricted fertile or pregnant women from areas or work allegedly hazardous to reproductive health.[65] Other anecdotal reports of exclusionary policies have stemmed from court or administrative proceedings against companies employing such policies.[66] Results of the Family, Work and Health Survey indicate that nearly 20% of Massachusetts chemical and electronics manufacturing firms restrict some class of worker from work with substances or in areas or occupations that may affect reproduction. With only one exception, restrictions applied solely to women workers.

Given the relative scarcity of reports of exclusionary policies to date, the finding that nearly one out of five firms restricts women workers is impressively high. Moreover, since restrictions were more common among larger corporate size groups, the actual number of women potentially affected by restrictive policies and practices is of even greater significance.

The extensive sampling and high participation rate in this survey makes it highly likely that the reported prevalence of restrictive practices is generalizable to the whole chemical and electronic industries throughout Massachusetts, with the exception of very small firms (employing less than 50 workers) that were not sampled. Whether these results are reflective of national trends or are characteristic of other industries would require a much broader investigation.

It is unlikely that the 20% prevalence rate of restrictive practices is spuriously high. The sheer level of detail required in the survey about each restriction would make over-reporting of restrictions unlikely. Furthermore, the survey was conducted within one year of corporate release of a study commissioned by Digital Equipment Corporation that found increased rates of spontaneous abortion among women fabrication workers at its Hudson, Massachusetts facility.[67] The public outcry from legal, women's, and worker advocacy groups concerning exclusionary policies in the high tech industry that followed release of the highly-criticized Digital study would make cautious under-reporting by some firms a possibility.[68] Thus, the prevalence estimate obtained in the survey may be a conservative one.

In many instances, the criteria used for restriction of employees bore little relationship to current scientific knowledge about the effects of particular substances or about the categories of workers truly at risk.

On the one hand, women workers were sometimes "overprotected" -- restricted from work which does not pose a significant threat specifically to women as a class. For instance, one company restricted all women from any heavy lifting. Another company prohibited all women from any work in their lab. Women only (including pregnant women, women of childbearing age and all women) were restricted from work with lead and radiation even though these exposures may present a risk to adults of both sexes as well as the conceptus.

On the other hand, some restrictive policies were "under inclusive" due to assumptions that only pregnant women were at risk. Pregnant women and women trying to conceive were restricted from work with glycol ethers, which are also strongly implicated as male reproductive hazards. In sharp contrast, none of the 54 companies with glycol ethers in use had policies or practices that restricted men from work with these substances. While such policies may protect the health of pregnant women in the short run, they cannot address the risks posed to the reproductive health of men and women before conception.

The fear of exposure to hazardous substances at work often becomes acute for women once they become pregnant. Policies which allow pregnant women to transfer away from hazardous work are praiseworthy, especially when wages and benefits are maintained during the transfer. But transfer policies for pregnant women are not sufficient to protect reproductive health. First, hazardous substances can affect fetal health in the first 6-8 weeks of pregnancy, before a woman may know she is pregnant. Moreover, there is little scientific rationale to support the contention that only pregnant women are susceptible to deleterious effects from workplace exposures. With rare exception, reproductive toxins studied in sufficient detail have been found to exert multiple effects on adults of both sexes, as well as the conceptus. From a scientific standpoint, employer practices that do not address male-mediated effects cannot adequately protect the health of all workers.

Social, Economic and Legal Issues

From a social standpoint, these practices have important implications for issues of gender equity in the workplace. Selective exclusion of women on the basis of reproductive risk can have a dramatic impact on women's job opportunities. Some companies restricted all women from entire areas of production such as plating, soldering, or fabrication areas. One chemical company prohibited women of childbearing age from any research and development areas where potential teratogens are in use, thus eliminating most women from one area of more highly paid and highly skilled work. Given that women comprise only 17% of the technicians in the Massachusetts chemical industry,[69] such policies raise questions of equity for women workers.

Firms employing fewer women than men were also more likely to restrict women on the basis of reproductive risk, thus reinforcing the unequal gender stratification of the workforce. Although companies with restrictions on all women or women of childbearing age were few in number, firms that did so employed extremely low proportions of women. One chemical company employed only 10 women in production out of a total of 170 production workers; another electronics firm employed 15 women out of 140. In general, chemical companies -- which characteristically employ more men than women[70] -- were more likely to restrict all women than the more female-intensive electronics industry. Restrictive practices thus reinforce and are reinforced by the gender segregation of the workplace.

From a legal perspective, adoption of restrictive policies and practices may be motivated by corporate fear of tort liability for injured offspring. However, most suits and complaints to date alleging reproductive damage have been brought by males.[71] Moreover, exclusionary policies may violate Title VII of the Civil Rights Act which prohibits gender discrimination in the workplace.[72] In particular, policies involving mandatory pregnancy testing may violate women's right to privacy and personal autonomy.[73] In the present survey, women were frequently asked about current pregnancy status at the time of hire, with two companies conducting pregnancy testing at hire. As these practices were most common among firms employing male-intensive workforces, mechanisms to assess women's fertility status may interface with discriminatory employment practices.

Of those companies that required women to leave their jobs once they became pregnant, 92% offered restricted women the option of another job with the company with retention of the same rate of pay and benefits during their pregnancy. This finding stands in marked contrast to prior reports of exclusionary practices where women faced job or income loss as a result of these policies.[74] Among firms without restrictions, only 13% offered voluntary job transfers to concerned workers--leaving the majority of employees without transfer options.

The role of unionization of production workers on these issues is unclear. Unionization did not appear to differentiate between companies offering health and safety training of any kind, nor offering information specific to reproductive hazards. And there appeared to be a pattern where unionized companies were more likely to restrict workers and disallow transfers than non-unionized companies. As only 18% of the companies were unionized in the first place, these low numbers make it difficult to be certain of what role unionization plays in company behavior. Quite likely is the possibility that unions themselves have not addressed these issues and that other factors predict when companies will engage in particular practices related to reproductive hazards.

Alternative Policies

Although current policies may in some cases be misdirected, it is important to maintain the protections which do exist for workers. In particular, voluntary transfer policies which maintain wages and benefits are laudible and should be extended to all workers at risk (that is, men and women who are trying to conceive).

While a well-compensated, alternative job placement may be an important option for the worker faced with reproductive health concerns, this practice has limitations. In the first place, large firms were more likely to offer job transfers than smaller companies--a finding that may reflect their enhanced economic stability and greater availability of job options. Since the majority of workers in the United States are employed in small firms,[75] this option does not benefit most workers. Moreover, with only one exception, transfers were offered to women only.

Long-term solutions to the problem of reproductive hazards should focus on removal or control of potentially harmful exposures at the worksite rather than on removal of workers. The federal Occupational Safety and Health Act requires that employers provide to "every working man and woman" a "safe and healthful" workplace.[76] If job transfers become necessary, this option should be available to all prospective parents--male and female.

Methods to reduce workplace exposures include the use of chemical substitution, engineering and administrative controls, and personal protective equipment.[77] While the present survey was not designed to assess the extent to which job modification is used as a solution to reproductive risk, it is notable that three firms surveyed volunteered the use of this option.

In sum, the overriding problem illustrated by this study is a lack of awareness and attention to reproductive hazards in the workplace. For some companies this has resulted in misdirected policies. For many more companies this has resulted in a complete absense of education and policy development in this area.

PART TWO: Parenting and Family Care Issues

FINDINGS

This survey assessed company policies towards parenting and family care in order to develop a profile of the workplace policies that most directly affect working parents -- especially working mothers -- in these industries.

Most pressing for new parents are policies concerning maternity and paternity leave. Ninety-two percent of all companies surveyed indicated that they had a maternity leave policy (182 companies). A variation in the existence of a maternity leave policy was found by size of company. The prevalence of maternity leave policies in the two smallest size groups ranged from 72 to 75% whereas 85 to 93% of the three largest size groups had such policies. This relationship of existence of maternity leave policy was significantly related to company size. The existence of a maternity leave policy was not significantly related to either the sex stratification or the unionization status of the workforce.

Of the companies with maternity leave policies (182), 145 or 80% of all companies provided leave with pay (42 on disability pay; 103 on company pay). Companies were not asked about the level of pay while on maternity leave, only any pay.

Of the companies with maternity leave policies, 26 or 14% gave women 6 weeks or less off for "normal births." Of these, one company granted 4 weeks leave; 25 companies granted 6 weeks leave. (See Figure 6)

Approximately 43% of companies with maternity leave policies allowed 8 weeks leave; 10% granted 12 weeks leave; 8% granted leaves of 13 to 26 weeks. The remaining companies either left it up to the doctor's discretion, did not know company policy, or had no defined set of leave time for childbirth.

Only 16 companies in our survey granted paternity leave and, of these, seven granted 5 days or less to new fathers. Of the remaining nine companies, three granted leaves of 2 to 3 weeks; two companies granted 6 to 8 weeks; three granted 12 weeks leave and one company allowed a paternity leave up to 20 weeks. Of the 16 companies with paternity leave policies, 14 provided a leave with some pay.

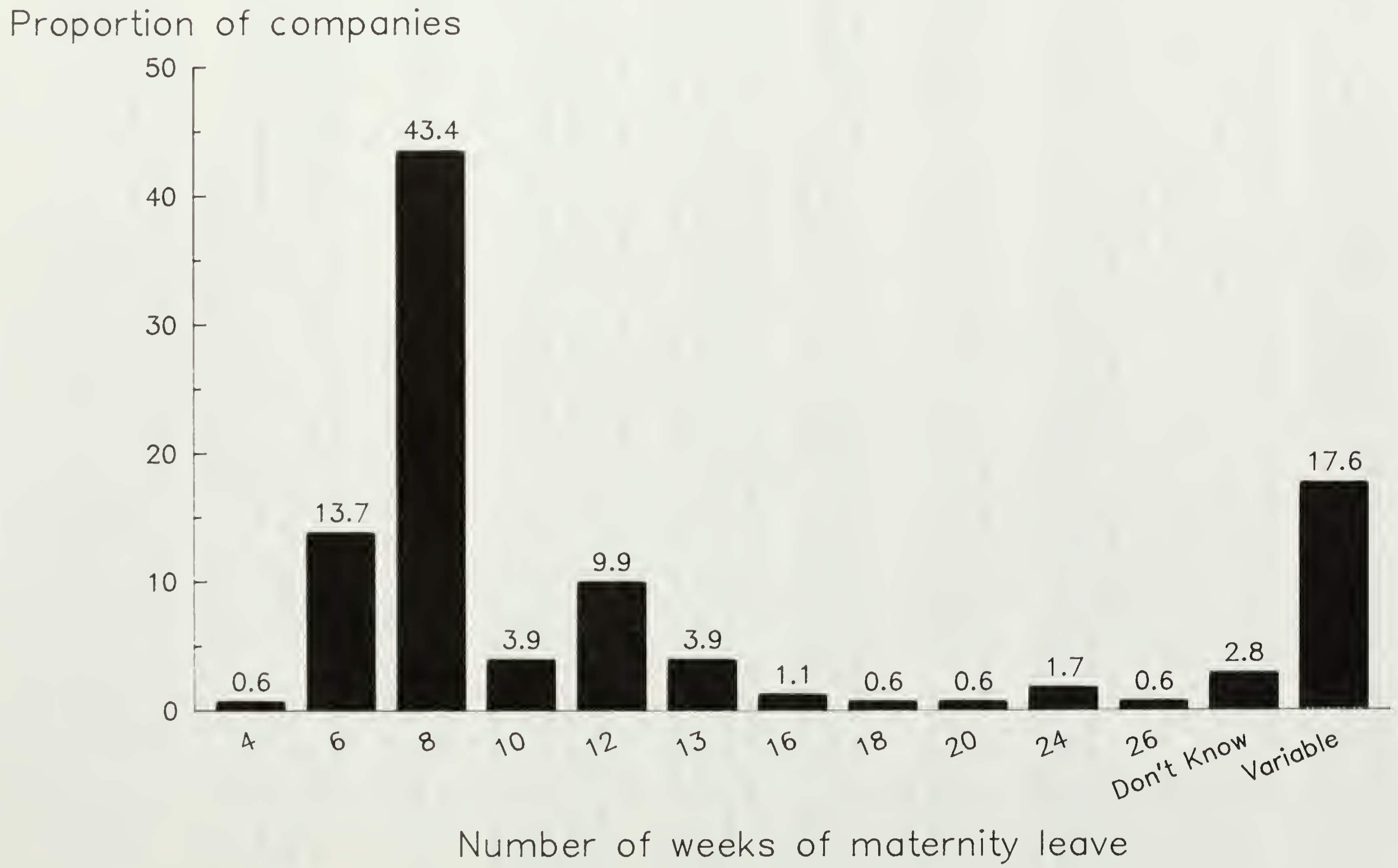
In order to assess company knowledge of the general health status of employees, companies were asked whether they conducted a health history or laboratory tests when hiring new employees.

Forty-nine percent of all companies (98) take a health history when hiring employees. Of these, 84% ask about a history of heart disease and 87% ask about a history of high blood pressure. Of the 98 companies that take a health history, 34% (33) ask women about current pregnancy status and 22% (21) ask about a history of previous pregnancies. Further analysis of these issues is in the prior section on reproductive health hazards.

Twenty-nine percent of all companies (57) conducted laboratory tests when hiring employees. Among these tests, most common were blood pressure readings (91%), urinalysis (88%), hematocrit testing (60%) and cholesterol testing (40%). Of the 57 companies that conduct laboratory tests, two companies also conducted pregnancy tests when hiring women workers.

Figure 6

Provision of Maternity Leave by Weeks



Total number of companies = 198

Companies were asked whether they provided general health education to employees. Forty six percent of all companies (91) provide some form of health education to their workforce. Providing health education was significantly related to company size. The most common forms of information provided regarded smoking cessation (83%), exercise (71%) and nutrition (68%).

Approximately one-third of these companies (31) provided information about prenatal care to workers. The larger the company, the more likely this information would be provided. Seventeen percent of companies in the 50 to 99 size group offered information on prenatal care, whereas 53% of companies with 1000 or more employees did so. Twenty-four companies (27% of those that provide any health education) provided information on family planning.

The companies in the largest size groups tended to offer family planning information more often than companies in the smaller size groups. However, the smallest size group had a proportion of 28%, which was more than the 20% for companies in the 250 to 499 size group. Electronics companies were more likely than chemical companies to provide information on family planning (32 v. 12%)

Of all of the companies interviewed, 71% provided counseling or assistance to employees who are experiencing personal or family problems. A multivariate analysis of factors found that the provision of this assistance was significantly more likely to be by male-intensive companies and not significantly related to female-dominated companies, industry, or unionization. Seventy-six percent of all companies provided employees with some form of counseling or assistance on alcoholism or drug abuse (including assistance provided through insurance plans). Electronics companies were slightly more likely than chemical companies to provide such assistance (73 v. 63%). Providing these forms of assistance is clearly related to size of the company. Fifty-three percent of companies in the smallest size group provided assistance with personal and family problems, whereas, 94% in the largest group did so. For assistance with alcoholism and drug abuse, the proportions were 60% for the smallest size group and 100% for the three size groups of 250 or more employees.

Many working parents face problems juggling child care or elder care responsibilities with paid work. These conflicts are exacerbated when children or elders are sick. Company awareness of these problems was relatively low. Only 10% of firms surveyed asked about the presence of children at home and only 2% asked about elderly parents at home. Of all of the companies surveyed, 96% provided some form of paid sick leave for employees. Of these companies, however, only half (48%) allowed employees to use sick leave to care for ill family members.

Very few companies provided any form of child care benefits to workers. Of all of the companies surveyed, only 16 provided some form of child care benefits, including provision of tax vouchers, support for an off-site or on-site facility or some other arrangement. This practice did not vary in any notable way by size of company or type of industry. Larger companies were no more likely to offer child care benefits than smaller companies.

Overall, companies with a male-intensive workforce were somewhat more likely to provide support and services to working parents. Male-intensive companies were more likely than female-intensive companies to provide education on nutrition (76 v 65%), exercise (82 v 63%), and prenatal care (42 v 27%); to provide assistance or counseling on both personal family problems (81 v 64%) and alcoholism or drug abuse (82 v 70%); to have maternity leave (85 v 74%), paternity leave (14 v 2%) and child care benefits (10 v 7%). Although male-intensive companies were more likely than female-intensive companies to be unionized (23 v 18%), unionization alone did not account for the difference in the provision of parenting and family care services.

DISCUSSION

Overall, companies gave mixed support to working parents. Some flexibility to care for sick family members was provided by allowing workers to use sick days to care for ill family members (though fewer than half of companies surveyed allowed for this). Also, many companies provided counseling and assistance to workers during times of personal or family crisis. Companies were even more willing to provide assistance in combatting alcohol or drug abuse.

The survey findings on maternity leave policies point to the need for further education and enforcement of the law in Massachusetts. Even though Massachusetts law requires employers to allow women workers to take a minimum of eight weeks maternity leave (unpaid), a substantial number of companies in our survey (27 or 14%) provided less than the minimum allowable leave. Although the law allows women workers to voluntarily return to work sooner than 8 weeks, companies must allow women 8 weeks unpaid leave without loss of job or benefits. Leave policies of less than eight weeks raise questions not only of legality but of health issues for both the mother and newborn child. Such policies may force women to return to work before they have physically recovered from childbirth. Since the majority of women are in the workforce because of economic necessity, inadequate maternity leave policies may pose a choice for new mothers between their health and economic necessity.

Although a growing number of men express a desire for intimate involvement in the birthing process and early childrearing, very few companies (16) allowed men leave time for the birth of a child. Seven of these companies provided for a leave of 5 days or less. At the other end of the spectrum -- perhaps reflecting some change in the times -- three companies allowed new fathers 12 weeks and one company allowed a paternity leave of up to 20 weeks for the birth of a child. Further research on the effect of such paternity leave policies on both the company and new parents could shed light on the importance of parental leave policies for men.

Companies were no more likely to provide support for child care than to provide for paternity leaves. Given the tremendous expense of child care for working parents (which can average $150 per week for parents in Massachusetts), the lack of public or private child care support represents a considerable burden for working parents. New parents who must return to work soon after the birth of a child, because of economic necessity or company policy, are thus faced with a considerable loss of economic security from child care expenses.

Overall, working parents within companies that employed a greater number of men than women in production received greater company support for family care issues. This finding is somewhat surprising for it goes against assumptions that awareness and support for parenting and family issues are increased by women's presence in the workforce. Coupled with the fact that women working in male-intensive industries are more likely to earn a higher income than women in female-intensive workplaces, working mothers clearly benefit from work in companies that employ a greater number of men than women.

In sum, although there are more working parents in the Massachusetts workforce than ever before, company policies do not address the particular needs of working parents. Policies that would enhance the health and well-being of parents and children and reduce the conflict between parental and workplace responsibilities would include the provision of parental leave for both new mothers and fathers, better support for child care, and support for workers who have the added responsibilities associated with the care of elderly parents.

RECOMMENDATIONS

PART ONE: REPRODUCTIVE HAZARDS IN THE WORKPLACE

Areas of Need

The results of this survey illustrate the need for program development in two areas -- in education and in policy development.

WORKER AND EMPLOYER EDUCATION about reproductive hazards in the workplace is essential to the prevention of poor birth outcomes and reproductive disorders for men and women. The Working Women's Health Project, initiated in 1988 by the Massachusetts Department of Public Health, provides information about reproductive hazards to workers at risk for exposure to reproductive toxins. In addition, the Occupational and Environmental Reproductive Hazards Clinic and Education Center at the University of Massachusetts Medical Center provides counselling and intervention for workers at risk and other educational services for employers and community health providers. The further development of this kind of work is essential to the protection of reproductive health in the workplace.

The provision of information to those who are most directly affected by potential hazards is the most effective way to insure workplace health and safety. As the Occupational Safety and Health Administration has put it, "Sound public policy dictates that workers be afforded a central role in the detection and solution of health problems, as there are no assurances that anyone else will protect their health with equal vigor or determination." (Note: OSHA, "Worker's Access to Medical Records" Standard (29 CFR 1910, 20) Federal Register, May 23, 1980) It is essential that workers be provided with the kind of information necessary to have well-informed input into the development of workplace policies.

Educational programs should target workers not only in the chemical and electronics industries, but also in traditionally "female" occupations, such as health care.

Effective health and safety training must be culturally appropriate and must serve workers who have the least access to health and safety information, particularly low-income women and women of color. In the electronics and chemical industries, for instance, minority women (Black, Hispanic and Asian) are most highly concentrated in the most hazardous jobs as operatives and laborers (see Appendix A).

Scientific knowledge about the reproductive effects of the thousands of chemicals in use in the workplace is sometimes limited. Where scientific uncertainty exists, it is especially important that workers understand the risks that may potentially exist so that they may make the best informed choice about work with suspected reproductive hazards.

POLICY GUIDELINES are also necessary to provide both workers and employers with a guide to the most equitable and effective methods of protecting reproductive health in the workplace. Such guidelines should assess the viability of the full range of work options from safer chemical substitution or engineering controls to the transfer or restriction of workers at risk.

The fear of exposure to hazardous substances at work often becomes acute for women once they become pregnant. It is critically important that policy guidelines address the immediate concerns of pregnant women and provide employers with an informed perspective on how best to address these health concerns. While the risks to pregnant women may be readily apparent, men and women who are trying to conceive a child are also at risk. The concerns of "potential parents" are equally important to address through such guidelines.

Finally, policy development is necessary to clarify the legal questions raised by reproductive hazard policies. Under what circumstances do employers have the right to obtain information about workers' reproductive status? Do workers have the right to refuse requests for such information? What rights do workers have to transfer away from hazardous jobs when they believe they are at reproductive risk? What rights should they have? Under what conditions are mandatory restrictions on women workers a violation of discrimination law?

These questions can best be addressed by a task force representing a cross-section of members from appropriate state agencies, industry, labor organizations, and community groups. The establishment of such a task force could provide the lead, nationally, on these issues.

PART TWO: PARENTING AND FAMILY CARE ISSUES

Areas of Need

The results of the Family, Work and Health survey point to a number of important areas of need in relation to parenting and family care issues.

First, *WORKER AND EMPLOYER EDUCATION* about basic legal rights regarding pregnancy, parenting and work is essential. Increased awareness of maternity leave laws is necessary for the reduction of discriminatory workplace practices. Leave policies of less than the legally mandated eight weeks raise questions not only of legality but of health issues for both the mother and newborn child. Such policies may force women to return to work before they have physically recovered from childbirth. Since the great majority of women are in the workforce out of economic necessity, inadequate maternity leave policies may pose a "choice" for new mothers between their health and economic necessity.

Education about pregnancy and work should also address the legal issues associated with employer's questions regarding pregnancy status during health examinations at hire. Education about legal rights can take place through health education programs which already exist in the workplace or can be provided through health care providers, labor, community or professional organizations serving target populations.

Second, support for INNOVATIVE CHILD CARE PROGRAMS, both public and private, is essential for the creation of a healthy work environment. One of the most obvious needs of working parents is quality child care which is both affordable and convenient. Child care is especially pressing for low-income parents. Given the tremendous expense of child care, the lack of public or private child care support represents a considerable burden for working parents. Whether from public or private sources, financial assistance for child care is especially important for low-income working mothers.

Third, support for PARENTAL LEAVE LEGISLATION which guarantees a leave for both mothers and fathers would help ease the burden faced by new parents. Paid parental leave is particularly essential for low-income men and women. Paternity leave policies were rare. Further research on the impact of paternity leave policies, where they do exist, could shed light on the impact of paternity leave on new parents and the viability of paternity leave for other emplouers.

RECOMMENDATIONS

A work environment which enhances family health is one that can respond in a positive way to the varying needs of its workers. From protecting workers from reproductive hazards to providing support for workers who must care for children or elderly family members, workplace practices can deeply affect the quality of life for men, women and children throughout the life cycle.

Much public attention has focused on "parenting and family care" problems of working parents, particularly in relation to child care and parenting leave. Planning groups in the Executive Office of Labor and the State Legislature have been formed to develop policy and legislation in these areas. Support for this work -- through participation in these planning groups and active promotion of child care programs, elder care programs and parental leave legislation -- is essential to the development of services which can better address the needs of working parents.

Less public attention has been paid to the problems associated with reproductive hazards in the workplace. Education and policy development in this area is critical for the prevention of poor birth outcomes and other reproductive health problems for both men and women. Given the great need in this area, it is the recommendation of this report that the the Department of Public Health and Occupational Health Program at the University of Massachusetts focus primary attention in this area, in concert with other appropriate state agencies, such as the Department of Labor and Industries. In light of this immediate need, this report recommends:

** THE EXPANSION OF EDUCATIONAL ACTIVITIES FOR WORKERS, EMPLOYERS AND HEALTH CARE PROVIDERS ABOUT REPRODUCTIVE HAZARDS IN THE WORKPLACE:
The provision of information to those who are most directly affected by potential hazards is the most effective way to insure workplace health and safety. Where scientific uncertainty about a suspected reproductive hazards exists, it is especially important that employers and employees understand the risks that may potentially exist so that they may make the best informed choice about work with suspected reproductive hazards.

** THE ESTABLISHMENT OF A TASK FORCE ON FAMILY, WORK, AND HEALTH TO DEVELOP POLICY GUIDELINES IN THE AREA OF REPRODUCTIVE HAZARDS IN THE WORKPLACE:
A Task Force comprised of representatives of appropriate state agencies and members of the business, labor and women's communities can best address the questions of health and equity raised by the presense of reproductive hazards in the workplace. Policy guidelines could assess the viability of the full range of work options from safer chemical substitution or engineering controls to the transfer or restriction of workers at risk. It is critically important that policy guidelines

address the immediate concerns of workers (both male and female) and provide employers and employees with an informed perspective on how best to address both their health and legal concerns.

** SUPPORT FOR STATE-WIDE EFFORTS TO ADDRESS FAMILY CARE ISSUES IN THE WORKPLACE, SUCH AS THE PROVISION OF BETTER CHILD CARE AND ELDER CARE PROGRAMS AND SUPPORT FOR FAMILY LEAVE POLICIES:
Departmental support for on-going work in the Executive and Legislative branches in this area could help address the pressing needs of working parents for better child care and more flexible family leave policies. The findings of this report reinforce these efforts by documenting the lack of services currently available to working parents and by pointing to the clear need for additional public and private programs which can help ease the conflict between work and family responsibilities.

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APPENDICES

Appendix A*

RACE AND GENDER PROFILES

A. Chemical Industry

According to the Equal Employment Opportunity Commission, men comprise nearly three-fourths of the Massachusetts chemical industry. Within the white collar sector of this industry, men make up 70% of all employees. More men than women are employed in all occupations within this sector except for office and clerical work. Of the 1,384 people employed in the clerical profession, 86% are women.

The male/female ratio is generally the same in the blue collar sector. As in the white collar sector, men dominate all aspects of blue collar work. Ninety-six percent of the craftworkers and 79% of the service workers are men. These two occupations are the higher paid and higher skilled jobs within blue collar work. The gender gap closes somewhat for operatives and laborers -- the lower paid and less skilled occupations. Almost one-third of all operatives and 41% of all laborers are women.

In Massachusetts, only 7% of those employed in the chemical industry are minorities (4% are Black; 2% are Hispanic and 1% are Asian or Pacific Islander). Minorities make up 6% of the white collar sector whereas they comprise 10% of all blue collar workers. As with women, minorities are employed mainly as laborers and operatives.

B. Electronics Industry

Women make up over one-third of total employment in the Massachusetts electronics industry. Of all white collar workers in this industry, 71% are male and 29% are female. As in the chemical industry, more men than women are employed in all aspects of the white collar sector except for office and clerical work.

In the blue collar sector, the male/female ratio is almost equal (53% are men, 47% are women). Men, however, are mainly employed in the higher skilled and higher paying jobs as crafts and service workers. More women than men are employed as operatives and laborers. Women comprise almost two-thirds of these lower paid occupations in the electronics industry.

Only 7% of the 78,796 employees in the electronics industry are minorities (3% are Black; 3% are Hispanic, and 1% are Asian or Pacific Islander). Like the chemical industry, most minorities (9%) are in the blue collar sector employed as operatives and laborers. Minority women face further employment discrimination in this industry in that for all races, women outnumber men as laborers and operatives.

*(Compiled and written by Corinne Lidsky)

Source: Equal Employment Opportunity Program, Employment Analysis Report Program, 1983 EEO-1 Report Summary by Industry Within State

Appendix B

LETTER OF INTRODUCTION

Jane Smith, M.D., Medical Director
Acme Company
123 Main St.
New Town, MA 01234

Dear Dr. Smith,

There is growing interest among employers and health professionals about issues relating to working parents. From conception through pregnancy to caring for children, working parents experience unique stresses in handling both their work and family responsibilities. Workplace practices regarding child care, maternity leave, substances affecting reproduction, and employee assistance programs can play a vital role in reducing these stresses.

The Occupational Health Program at the University of Massachusetts, in conjunction with the Massachusetts Department of Public Health, is conducting a telephone survey about the issues of family, work and health. Your name was selected on a random basis from a list of Massachusetts employers. We plan to call you sometime within the next two weeks in order to ask you some survey questions. Your response is very important! We need a complete picture of what employers throughout the state are now doing.

Pre-testing of the survey indicates that it should take no more than 15 minutes of your time. Confidentiality of your responses will be assured. All responses will be summarized and no identification of individuals and organizations will be available.

This survey is a first step in our development of innovative programs which can better serve the needs of employers and working parents. Your participation is crucial. Participants will receive a copy of our final report. If you have any questions about the survey, please feel free to discuss them with the caller or contact us.

Thank you for your time and anticipated cooperation.

Sincerely,

Maureen Paul, M.D.
Research Fellow
Occupational Health Program
University of Massachusetts
(617) 856-6162

Cynthia Daniels, Ph.D.
Occupational Health Coordinator
Women's Health Unit
Department of Public Health
(617) 727-7222

APPENDIX C

POSSIBLE REPRODUCTIVE HAZARDS

(1) Arsenic/Arsine Gas

Uses: Metallurgy for hardening copper, lead, alloys; manufacture of certain kinds of glass; pigment production; insecticides, fungicides, rodent poison; semiconductor dopant

Possible Health Effects:
Carcinogen (skin, lungs in humans)
Mutagen
Teratogenic in animals (no human studies)
(for Health Studies see notes 78-80)

(2) Benzene

Uses: Production of dyes, styrene, phenol, cyclohexane and other organic chemicals; manufacture of detergents, pesticides, solvents, paint removers, artificial leather, linoleum, oil cloth, airplane dopes, varnishes

Possible Health Effects:
Carcinogen (leukemia)[81]
Mutagen[82-85]
Maternal anemia, hemorrhage and possible menstrual irregularity[86]

(3) Carbon Disulfide

Uses: Solvent for lipids, sulfur, rubber, phosphorus, oils, resins and waxes; insecticides; preparation of rayon viscose fibers

Possible Health Effects:
Possible spermatoxin (decreased sperm count, increased abnormal forms)[87-89]

(4) Formaldehyde

Uses: Ionizing solvent; manufacture of formic esters, resins, leather, rubber, metals and woods; pyrolysis product of colophony soldering flux

Possible Health Effects:
Weak mutagen
Possible carcinogen (shown in animals only-- nasal)
(for Health Effects see notes 90-92)

(5) Methylene Chloride

Uses: Solvent for cellulose acetate; degreasing and cleaning fluid; paint and varnish removers; insecticides and fungicides; fire extinguishers

Possible Health Effects:

Possible mutagen[93]

Metabolized to carbon monoxide in vivo[94,95]

(6) Radiation (non-ionizing)

Uses: Testing of semiconductor components; plasma etching ultraviolet, electric arc operations and mercury vapor lamps; infrared, steel and glass fabrication, and drying operations; microwave/radiofrequency, radar, microwave ovens,broadcasting and communications, drying, sealing and fusing operations, activation of chemical reactions, electronic tube testing; extremely low frequency (ELF), electric power transmission lines, specialized communications equipment, VDT's.

Possible Health Effects:

Testicular degeneration in animals with high energy exposure[96,97]

Teratogenesis in animals[98]

Possible childhood cancer[99-102]

(7) Toluene

Uses: Varnish formulations (electronics); in manufacture of benzoic acid, explosives, dyes and many other organic compounds; solvent in the extraction of various principles from plants; solvent for paints and coatings; component of gasoline

Possible Health Effects:

Teratogenic with chronic, high dose exposure[103-106]

(8) Trichloroethane (TCA)

Uses Cold type metal cleaning; cleaning plastic moulds

Possible Health Effects:

Possible mutagen

Possible carcinogen

(For Health Effects see notes 107-109)

(9) Trichloroethylene (TCE)

Uses: Solvent for fats, waxes, resins, oils, rubber, paints, and varnishes; solvent for cellulose esters and ethers; solvent extraction in many industries; degreasing solvent (vapor degreasing of metal parts); manufacture of organic chemicals, pharmaceuticals; drycleaning and extraction; anesthetic

Possible Health Effects:

Mutagen

Possible carcinogen (animals)

(For Health Effects see notes 110-112)

(10) Vinyl Chloride

Uses: Plastics industry; refrigerant; in organic syntheses; production of vinyl chloride resins, methyl chloroform; component of propellant mixtures

Possible Health Effects:

Mutagenic[113-116]

Carcinogenic in animals and humans (liver, brain, lung, haemolymphopoietic system)[117-119]

Possible increased spontaneous abortion in wives of exposed males

APPENDIX D

ID #__________

CALLER ID ____

TIME STARTED _____

FAMILY, WORK, AND HEALTH
1987

To start, I'm going to read a list of health-related activities. I'd like you to tell me which of these your company does when hiring employees:

1 Do you take a health history? 1_____

_____ YES
_____ NO (IF NO, GO TO QUESTION 2)

1A Do you take a history of heart disease? ___ YES ___NO 1A____
1B Do you ask about history of high blood pressure? ___YES ___NO 1B____
1C Do you ask about current pregnancy status? ___YES ___NO 1C____
1D Do you ask about outcomes of prior pregnancies? ___YES ___NO 1D____

2 Do you do lab tests? ___YES ___NO (IF NO, GO TO QUESTION 3) 2_____

If you do lab tests, which of the following tests are done?

2A Do you do a urinalysis? __YES ___NO 2A____
2B Do you do a hematocrit? __YES ___NO 2B____
2C Do you do a serum cholesterol test? ___YES ___NO 2C____
2D Do you do a pregnancy test? ___YES ___NO 2D____
2E Do you take a blood pressure reading? ___YES ___NO 2E____

3 Do you provide health education for employees?

___YES ___NO (IF NO, GO TO QUESTION 4) 3_____

If you do provide education, do you provide any of the following::

3A Information on nutrition? ___YES ___NO 3A____
3B Information on pre-natal care? ___YES ___NO 3B____
3C Information on family planning? ___YES ___NO 3C____
3D Information on exercise? ___YES ___NO 3D____
3E Information on smoking cessation? ___YES ___NO 3E____

4. I'm now going to read a list of twelve substances and I'd like you to tell me if they are now in use in your workplace.

SUBSTANCE

Do you use: (READ LIST) (CIRCLE, BUT DO NOT READ RESPONSES)

4A. Arsenic or Arsine Gas........	1 IN USE	2 NOT IN USE	3 DO NOT KNOW	4A____
4B. Benzene......................	1 IN USE	2 NOT IN USE	3 DO NOT KNOW	4B____
4C. Carbon Disulfide	1 IN USE	2 NOT IN USE	3 DO NOT KNOW	4C____
4D. Formaldehyde.................	1 IN USE	2 NOT IN USE	3 DO NOT KNOW	4D____
4E. Glycol Ethers................	1 IN USE	2 NOT IN USE	3 DO NOT KNOW	4E____
4F. Lead.........................	1 IN USE	2 NOT IN USE	3 DO NOT KNOW	4F____
4G. Mercury (Methyl/ Organic)....	1 IN USE	2 NOT IN USE	3 DO NOT KNOW	4G____
4H. Methylene Chloride...........	1 IN USE	2 NOT IN USE	3 DO NOT KNOW	4H____
4I. Radiation (of any type)......	1 IN USE	2 NOT IN USE	3 DO NOT KNOW	4I____
4J. Vinyl Chloride...............	1 IN USE	2 NOT IN USE	3 DO NOT KNOW	4J____
4K. TCE or TCA................... (Trichloroethylene or ethane)	1 IN USE	2 NOT IN USE	3 DO NOT KNOW	4K____
4L. Toluene......................	1 IN USE	2 NOT IN USE	3 DO NOT KNOW	4L____

[AFTER THREE OR MORE "DO NOT KNOW" RESPONSES, PROBE FOR SOMEONE ELSE TO SPEAK TO ABOUT THIS LIST, AND THEN CONTINUE WITH SURVEY]

Now I'm going to ask you some short questions about how your company handles pregnancy and family issues:

5. Do you ask that workers let you know when they are pregnant? 5_____

___ YES ___NO

6. Is pregnancy testing available to workers on site? 6_____

____ YES ____NO (IF NO, GO TO QUESTION 7)

6A. If pregnancy testing is available on site, does the company pay for it? 6A____

___YES
___NO

7. Does the company pay for pregnancy testing off site? (For instance, through health insurance, direct payment of physician, or full or partial reimbursement of a health facility, etc.?)

___YES ___NO 7____

8. Does your company ever ask female employess about any of the following family or pregnancy matters:

A. When they are trying to get pregnant? ___YES _____NO 8A____
B. Use of contraception or sterilization? ___YES ____NO 8B____
C. How many children they have at home? ____YES ____NO 8C____
D. If they have elderly parents to care for at home? ___YES ____NO 8D____

9. Does your company ever ask male employess about any of the following family or pregnancy matters:

A. When their partners are trying to get pregnant? ___YES_____NO 9A____
B. Use of contraception or sterilization? ___YES ____NO 9B____
C. How many children they have at home? ____YES ____NO 9C____
D. If they have elderly parents to care for at home? ___YES ____NO 9D____

10. Do you provide counseling or assistance to employees who are experiencing personal or family problems?

_____YES ____NO 10____

11. Do you provide counseling or assistance to employees who are experiencing problems with alcoholism or drug abuse?

_____YES ____NO 11____

12. Is paid sick leave available to workers? 12____

___YES ___NO (IF NO, GO TO QUESTION 13 - READ INTRO TO QUESTION)

12A. If you do have paid sick leave, are workers allowed to use their paid sick leave to care for ill family members?

___YES ___NO 12A____

Okay, I have a few questions now about chemicals or substances in use in your workplace.

13. Are there any substances in use at your workplace that your company has to be careful about because they might effect reproduction?

___YES ___NO 13____

14. In the past two years (since January, 1985), have you received any training or information about reproductive health hazards?

___YES ___NO (IF NO, GO TO QUESTION 15) 13A____

If you have received training, could you tell me which of the following types of training you have received or attended?:

14A. Have you attended a workshop or seminar? ___ YES ___NO 14A____
If so, about how long did it last:
14A1. ____HOURS 14A1____
____DAYS
____WEEKS

14B. Have you attended a semester-long class on reproductive hazards? __YES __NO 14B____

14C. Have you received literature? ___YES ___NO 14C____

14D. Have you received any other type of training or information? 14D____
___YES (14D1 IF YES, Can you describe this? ______________

____

___NO

15. Is there any training or education given to workers who work with hazardous substances?

______YES _____NO (IF NO, GO TO QUESTION 16) 15____

15A. IF YES, Does this include information on reproductive hazards? 15A____

_____YES _____NO

15A1. If you do provide training or education, could you please describe it?:

____ 15A1___

16. Does your company ever restrict any workers from working with certain substances or in areas or occupations which may affect reproductive health? 16____

____YES (IF YES, CONTINUE THROUGH QUESTIONS ON NEXT FOUR PAGES)

____NO, (IF NO, GO TO 16A)

16A. Does your company ever grant transfers to workers due to workers' concerns about reproductive hazards? 16A____

_____YES (IF YES, GO TO PAGE 11, QUESTION 22)
_____NO (IF NO, GO TO PAGE 13, QUESTION 25)

17. For what substance, work area, or occupation which may affect reproductive health does your company restrict workers:

______________________ 17 ____

17A. How many female employees are in/work with (read item above)? 17A ____
17B. How many male employees are in/work with (read item above)? 17B ____

For (read item above) do you restrict:

17C. __ pregnant women? 17C _

1 YES ----> 17C1. For those restricted pregnant women, do they have the option of transfer to another job? 17C1_
2 NO
  1 YES --> 17C2. Does this include retension of same pay rate during transfer? 17C2_
  2 NO
    1 YES
    2 NO

17C3. For those restricted pregnant women, do they have the option of a leave of absence? 17C3_

1 YES -->	17C4. Does this include health benefits during leave?	17C5. Does this include pay during leave?	17C6. Does this include retaining seniority?	17C4_ 17C5_ 17C6_
2 NO	1 YES 2 NO	1 YES 2 NO	1 YES 2 NO	

17D. __ women trying to conceive? 17D _

1 YES ----> 17D1. For those restr. women trying to conceive, do they have the option of transfer to another job? 17D1_
2 NO
  1 YES --> 17D2. Does this include retension of same pay rate during transfer? 17D2_
  2 NO
    1 YES
    2 NO

17D3. For those restr. women trying to conceive, do they have the option of a leave of absence? 17D3_

1 YES -->	17D4. Does this include health benefits during leave?	17D5. Does this include pay during leave?	17D6. Does this include retaining seniority?	17D4_ 17D5_ 17D6_
2 NO	1 YES 2 NO	1 YES 2 NO	1 YES 2 NO	

17E. __ men whose partners are trying to conceive? 17E _

1 YES ----> 17E1. For those restr. men whose partners are trying to conceive, do they have the option of transfer to another job? 17E1_
2 NO
  1 YES --> 17E2. Does this include retension of same pay rate during transfer? 17E2_
  2 NO
    1 YES
    2 NO

17E3. For those restricted men whose partners are trying to conceive, do they have the option of a leave of absence? 17E3_

1 YES -->	17E4. Does this include health benefits during leave?	17E5. Does this include pay during leave?	17E6. Does this include retaining seniority?	17E4_ 17E5_ 17E6_
2 NO	1 YES 2 NO	1 YES 2 NO	1 YES 2 NO	

17F. Are there any other categories of workers your company restricts in/with (read item above)?
1 YES---> (Write comments:)
2 NO

18. Is there a second substance, work area, or occupation which may affect reproductive health for which your company restricts workers?

1 YES --> Can you tell me what that is? ____________________ 18 ____
2 NO (GO TO PAGE 12, QUESTION 23)

18A. How many female employees are in/work with (read item above)? 18A ____
18B. How many male employees are in/work with (read item above)? 18B ____

For (read item above) do you restrict:

18C. __ pregnant women? 18C _
1 YES ----> 18C1. For those restricted pregnant women, do they have the option of transfer to another job? 18C1_
2 NO
1 YES --> 18C2. Does this include retension of same pay rate during transfer? 18C2_
2 NO
1 YES
2 NO

18C3. For those restricted pregnant women, do they have the option of a leave of absence? 18C3_
1 YES -->
2 NO

18C4. Does this include health benefits during leave?	18C5. Does this include pay during leave?	18C6. Does this include retaining seniority?	18C4_ 18C5_ 18C6_
1 YES	1 YES	1 YES	
2 NO	2 NO	2 NO	

18D. __ women trying to conceive? 18D _
1 YES ----> 18D1. For those restr. women trying to conceive, do they have the option of transfer to another job? 18D1_
2 NO
1 YES --> 18D2. Does this include retension of same pay rate during transfer? 18D2_
2 NO
1 YES
2 NO

18D3. For those restr. women trying to conceive, do they have the option of a leave of absence? 18D3_
1 YES -->
2 NO

18D4. Does this include health benefits during leave?	18D5. Does this include pay during leave?	18D6. Does this include retaining seniority?	18D4_ 18D5_ 18D6_
1 YES	1 YES	1 YES	
2 NO	2 NO	2 NO	

18E. __ men whose partners are trying to conceive? 18E _
1 YES ----> 18E1. For those restricted men whose partners are trying to conceive, do they have the option of transfer to another job? 18E1_
2 NO
1 YES --> 18E2. Does this include retension of same pay rate during transfer? 18E2_
2 NO
1 YES
2 NO

18E3. For those restricted men whose partners are trying to conceive, do they have the option of a leave of absence? 18E3_
1 YES -->
2 NO

18E4. Does this include health benefits during leave?	18E5. Does this include pay during leave?	18E6. Does this include retaining seniority?	18E4_ 18E5_ 18E6_
1 YES	1 YES	1 YES	
2 NO	2 NO	2 NO	

18F. Are there any other categories of workers your company restricts in/with (read item above)?
1 YES---> (Write comments:)
2 NO

19. Is there a third substance, work area, or occupation which may affect reproductive health for which your company restricts workers?

1 YES --> Can you tell me what that is? ____________________ 19 ____
2 NO (GO TO PAGE 12, QUESTION 23)

19A. How many female employees are in/work with (read item above)? 19A ____
19B. How many male employees are in/work with (read item above)? 19B ____

For (read item above) do you restrict:

19C. __ pregnant women? 19C _
1 YES ----> 19C1. For those restricted pregnant women, do they have the option of transfer to another job? 19C1_
2 NO
1 YES --> 19C2. Does this include retension of same pay rate during transfer? 19C2_
2 NO
1 YES
2 NO

19C3. For those restricted pregnant women, do they have the option of a leave of absence? 19C3_

1 YES -->	19C4. Does this include health	19C5. Does this include pay	19C6. Does this include	19C4_
2 NO	benefits during leave?	during leave?	retaining seniority?	19C5_
	1 YES	1 YES	1 YES	19C6_
	2 NO	2 NO	2 NO	

19D. __ women trying to conceive? 19D _
1 YES ----> 19D1. For those restr. women trying to conceive, do they have the option of transfer to another job? 19D1_
2 NO
1 YES --> 19D2. Does this include retension of same pay rate during transfer? 19D2_
2 NO
1 YES
2 NO

19D3. For those restr. women trying to conceive, do they have the option of a leave of absence? 19D3_

1 YES -->	19D4. Does this include health	19D5. Does this include pay	19D6. Does this include	19D4_
2 NO	benefits during leave?	during leave?	retaining seniority?	19D5_
	1 YES	1 YES	1 YES	19D6_
	2 NO	2 NO	2 NO	

19E. __ men whose partners are trying to conceive? 19E _
1 YES ----> 19E1. For those restricted men whose partners are trying to conceive, do they have the option of transfer to another job? 19E1_
2 NO
1 YES --> 19E2. Does this include retension of same pay rate during transfer? 19E2_
2 NO
1 YES
2 NO

19E3. For those restricted men whose partners are trying to conceive, do they have the option of a leave of absence? 19E3_

1 YES -->	19E4. Does this include health	19E5. Does this include pay	19E6. Does this include	19E4_
2 NO	benefits during leave?	during leave?	retaining seniority?	19E5_
	1 YES	1 YES	1 YES	19E6_
	2 NO	2 NO	2 NO	

19F. Are there any other categories of workers your company restricts in/with (read item above)?
1 YES---> (Write comments:)
2 NO

20. Is there a third substance, work area, or occupation which may affect reproductive health for which your company restricts workers?

1 YES --> Can you tell me what that is? ____________________ 20 ____
2 NO (GO TO PAGE 12, QUESTION 23)

20A. How many female employees are in/work with (read item above)? 20A ____
20B. How many male employees are in/work with (read item above)? 20B ____

For (read item above) do you restrict:

20C. __ pregnant women? 20C _
1 YES ----> 20C1. For those restricted pregnant women, do they have the option of transfer to another job? 20C1_
2 NO
1 YES --> 20C2. Does this include retension of same pay rate during transfer? 20C2_
2 NO
1 YES
2 NO

20C3. For those restricted pregnant women, do they have the option of a leave of absence? 20C3_
1 YES --> 20C4. Does this include health benefits during leave? 20C5. Does this include pay during leave? 20C6. Does this include retaining seniority? 20C4_ 20C5_ 20C6_
2 NO
1 YES 1 YES 1 YES
2 NO 2 NO 2 NO

20D. __ women trying to conceive? 20D _
1 YES ----> 20D1. For those restr. women trying to conceive, do they have the option of transfer to another job? 20D1_
2 NO
1 YES --> 20D2. Does this include retension of same pay rate during transfer? 20D2_
2 NO
1 YES
2 NO

20D3. For those restr. women trying to conceive, do they have the option of a leave of absence? 20D3_
1 YES --> 20D4. Does this include health benefits during leave? 20D5. Does this include pay during leave? 20D6. Does this include retaining seniority? 20D4_ 20D5_ 20D6_
2 NO
1 YES 1 YES 1 YES
2 NO 2 NO 2 NO

20E. __ men whose partners are trying to conceive? 20E _
1 YES ----> 20E1. For those restricted men whose partners are trying to conceive, do they have the option of transfer to another job? 20E1_
2 NO
1 YES --> 20E2. Does this include retension of same pay rate during transfer? 20E2_
2 NO
1 YES
2 NO

20E3. For those restricted men whose partners are trying to conceive, do they have the option of a leave of absence? 20E3_
1 YES --> 20E4. Does this include health benefits during leave? 20E5. Does this include pay during leave? 20E6. Does this include retaining seniority? 20E4_ 20E5_ 20E6_
2 NO
1 YES 1 YES 1 YES
2 NO 2 NO 2 NO

20F. Are there any other categories of workers your company restricts in/with (read item above)?
1 YES---> (Write comments:)
2 NO

21. Is there a third substance, work area, or occupation which may affect reproductive health for which your company restricts workers?

1 YES --> Can you tell me what that is? ____________________ 21 ____
2 NO (GO TO PAGE 12, QUESTION 23)

21A. How many female employees are in/work with (read item above)? 21A ____
21B. How many male employees are in/work with (read item above)? 21B ____

For (read item above) do you restrict:

21C. __ pregnant women? 21C _
1 YES ----> 21C1. For those restricted pregnant women, do they have the option of transfer to another job? 21C1_
2 NO 1 YES --> 21C2. Does this include retension of same pay rate during transfer? 21C2_
2 NO 1 YES
2 NO

21C3. For those restricted pregnant women, do they have the option of a leave of absence? 21C3_

1 YES -->	21C4. Does this include health benefits during leave?	21C5. Does this include pay during leave?	21C6. Does this include retaining seniority?	21C4_ 21C5_
2 NO	1 YES	1 YES	1 YES	21C6_
	2 NO	2 NO	2 NO	

21D. __ women trying to conceive? 21D _
1 YES ----> 21D1. For those restr. women trying to conceive, do they have the option of transfer to another job? 21D1_
2 NO 1 YES --> 21D2. Does this include retension of same pay rate during transfer? 21D2_
2 NO 1 YES
2 NO

21D3. For those restr. women trying to conceive, do they have the option of a leave of absence? 21D3_

1 YES -->	21D4. Does this include health benefits during leave?	21D5. Does this include pay during leave?	21D6. Does this include retaining seniority?	21D4_ 21D5_
2 NO	1 YES	1 YES	1 YES	21D6_
	2 NO	2 NO	2 NO	

21E. __ men whose partners are trying to conceive? 21E _
1 YES ----> 21E1. For those restricted men whose partners are trying to conceive, do they have the option of transfer to another job? 21E1_
2 NO
1 YES --> 21E2. Does this include retension of same pay rate during transfer? 21E2_
2 NO 1 YES
2 NO

21E3. For those restricted men whose partners are trying to conceive, do they have the option of a leave of absence? 21E3_

1 YES -->	21E4. Does this include health benefits during leave?	21E5. Does this include pay during leave?	21E6. Does this include retaining seniority?	21E4_ 21E5_
2 NO	1 YES	1 YES	1 YES	21E6_
	2 NO	2 NO	2 NO	

21F. Are there any other categories of workers your company restricts in/with (read item above)?
1 YES---> (Write comments:)
2 NO

22A. What substance, work area, or occupation does your company allow workers to transfer from on grounds of concern about reproductive hazards:
(PROMPT UNTIL R. SAYS THERE ARE NO OTHERS)

1. ______________________________ 22A1____
2. ______________________________ 22A2____
3. ______________________________ 22A3____
4. ______________________________ 22A4____
5. ______________________________ 22A5____

Does your company allow transfers of:

22B. __ pregnant women? 22B _
1 YES --> 22B1. Does this include retension of same pay rate during transfer? 22B1_
2 NO
1 YES
2 NO

22B2. Does this include retaining seniority during transfer? 22B2_
1 YES
2 NO

22C. __ women trying to conceive? 22C _
1 YES --> 22C1. Does this include retension of same pay rate during transfer? 22C1_
2 NO
1 YES
2 NO

22C2. Does this include retaining seniority during transfer? 22C2_
1 YES
2 NO

22D. __ men whose partners are trying to conceive? 22D _
1 YES --> 22D1. Does this include retension of same pay rate during transfer? 22D1_
2 NO
1 YES
2 NO

22D2. Does this include retaining seniority during transfer? 22D2_
1 YES
2 NO

22E. Are there any other categories of workers your company restricts in/with (read item above)?
1 YES---> (Write comments:)
2 NO

22F. For the past two years (since January, 1985), could you tell me how many women have transferred out of areas where there were reproductive hazards present or suspected?
_____NUMBER TRANSFERRED ____NONE 22F _

22G. For the past two years (since January, 1985), could you tell me how many men have transferred out of areas where there were reproductive hazards present or suspected?
_____NUMBER TRANSFERRED ____NONE 22G _

(GO TO PAGE 13, QUESTION 25)

23. For the past two years (since January 1985), could you tell me how many women have transferred out of areas where there were reproductive hazards present or suspected?

___NUMBER TRANSFERRED ____NONE (IF NONE, GO TO QUESTION 24) 23____

23A. Were these transfers at the company's request or at the employee's request? 23A____

_____COMPANY'S REQUEST
_____EMPLOYEE'S REQUEST [PROBE FOR ADD. COMMENTS]
_____BOTH

23A1. ADDITIONAL COMMENTS: 23A1____

24. For the past two years (since January 1985), could you tell me how many men have transferred out of areas where there were reproductive hazards present or suspected? 24____

___NUMBER TRANSFERRED ____NONE (IF NONE, GO TO QUESTION 25)

24A. Were these transfers at the company's request or at the employee's request? 24A____

_____COMPANY'S REQUEST
_____EMPLOYEE'S REQUEST [PROBE FOR ADD. COMMENTS]
_____BOTH

24A1. ADDITIONAL COMMENTS: 24A1____

This next section is about leave policies and services available to workers.

25. Do you have a maternity leave policy? 25____

___YES ___NO (IF NO, GO TO QUESTION 26)

25A. If you do have a maternity leave policy, is it provided with pay or without pay? 25A____

___WITH PAY ___WITHOUT PAY

25B. What is the length of allowable leave time for normal births? 25B____

_________WEEKS (GO TO 25C)

_____VARIABLE--25B1. What is the longest length of time the company allows someone to take for a normal birth?_______________ 25B1____

25C. Does your policy allow an extended period of time beyond what you just told me for a difficult pregnancy?

___YES ___NO 25C____

25C1. IF YES, for how much more time beyond normal maternity leave? _____________ 25C1_____

26. Do you have a paternity leave policy?

_____YES _____NO (IF NO, GO TO QUESTION 27) 26____

26A. If you do have a paternity leave policy, is it provided with pay or without pay?

___WITH PAY ___WITHOUT PAY 26A____

26B. What is the length of allowable leave time for normal births? 26B____

_________WEEKS

_________VARIABLE 26B1. What is the longest length of time someone can take for a normal birth?_________________________ 26B1____

26C. Does your policy allow an extended period of time beyond what you just told me for a difficult pregnancy? 26C____

___YES ___NO

26C1. IF YES, For how much more time beyond normal paternity leave? _____________________________ 26C1____

27. Do you have any form of child care benefits available to workers? 27____

___YES ___NO (IF NO, GO TO QUESTION 28)

If you do have child care benefits, which of the following benefits does your company have:

27A. Do you have an on-site facility? ___YES ___NO 27A____
27B. Do you have an off-site arrangement? ___YES ___NO 27B____
27C. Do you have a tax voucher arrangement? ___YES ___NO 27C____
27D. Do you have some other arrangement? ___YES ___NO 27D____
27D1. If you do, please describe this arrangement: 27D1____

____

And lastly, I have a few basic questions about your company and workforce.

28. What type(s) of products or services does your organization produce or provide? ____ 28____

29. How many male production workers does your company employ in Massachusetts? ______________ If you don't know, could you find out? When would be a good time to call you back? 29____

Date:______________________________ Time:___________________________

30. How many female production workers does your company employ in Massachusetts________________ If you don't know, could you find out? When would be a good time to call you back? 30____

Date:______________________________ Time:___________________________

31. How many sites does this include? __________ 31____

32. Are production workers in your organization unionized? 32____

___YES ___NO (IF NO, GO TO QUESTION 33)

32A. If they are organized, do you know what union represents most production employees? _____YES 32A____
_____NO

IF YES, please specify the union:______________________ 32A1___

____

33. Is there anything you'd like to add about this survey or the kinds of assistance you could use from either the Department of Public Health or the U. Mass Occupational Health Program? 33____

Thank you very much for your time and effort in completing this survey.

TIME ENDED______________

LENGTH OF INTERVIEW_______________

Doc. # 0329W